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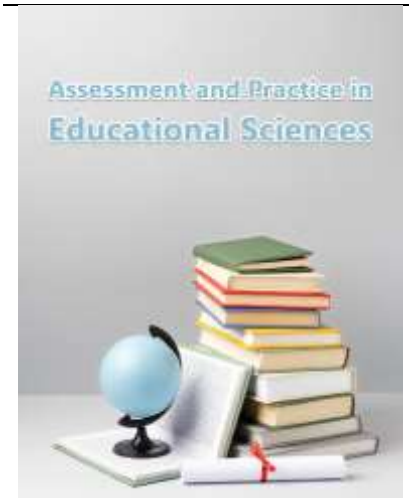

Phenomenological Exploration of the Challenges and Strategies for Implementing the "Entrepreneurship and Production Workshop" Curriculum in Upper Secondary Education: Based on Teachers' Lived Experiences

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ABSTRACT

This qualitative study, employing a phenomenological approach, examined the experiences of upper secondary theoretical school teachers in Tehran regarding the challenges and strategies for implementing the "Entrepreneurship and Production Workshop" curriculum. Data were collected through semi-structured interviews with 17 teachers selected purposefully and continued until theoretical saturation was achieved. The data were analyzed using inductive content analysis. Findings revealed that implementing this course faced significant challenges across five main dimensions: lack of teachers' specialized and practical competencies in entrepreneurship education; infrastructural, financial, and technological limitations; weaknesses in teacher preparation and professional empowerment systems; misalignment between the textbook content and students' real needs and environmental changes; and absence of effective linkages between schools, industry, and society. Furthermore, the teachers' suggested strategies were analyzed at three levels: macro-level policymaking, structural and organizational reforms, and improvement of instructional processes. The results of this study emphasized the necessity for a comprehensive review of policies, content, human resources, and executive mechanisms. They also demonstrated that achieving the goal of fostering entrepreneurial competencies in schools is only possible through structural reforms and the utilization of cross-sectoral capacities.

Keywords: entrepreneurship curriculum, phenomenology, teachers' lived experiences, upper secondary education, Entrepreneurship and Production Workshop.

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Introduction

Entrepreneurship education has emerged as a strategic lever for cultivating innovation, employability, and socio-economic resilience at the secondary-school level, where learners begin to form durable vocational identities and transferable competencies (1). Against the backdrop of accelerating technological change and volatile labor markets, systems that align curricular aims, teacher capacity, and school–industry linkages are more likely to translate "entrepreneurial mindsets" into measurable student outcomes such as opportunity recognition, teamwork, and problem solving (2-4). Contemporary scholarship stresses that entrepreneurship education (EE) is not merely a set of business topics but a competency-oriented, inquiry-driven approach to learning that mobilizes creativity, initiative, and responsible risk-taking across subjects (5, 6). However, in many secondary systems, the promise of EE remains undercut by fragmented policies, uneven teacher preparation, and curricular misalignments with learners' real-world needs (7-9).

At the instructional core, teacher knowledge, beliefs, and professional identity shape the enactment of EE far more than policy texts alone (10, 11). Evidence indicates that teachers' competencies span pedagogical content knowledge for entrepreneurship, facilitation of experiential learning, and the modeling of entrepreneurial behaviors such as opportunity alertness and iterative experimentation (12, 13). Institutional enablers—workplace climate, leadership, and evaluation systems—also mediate teachers' entrepreneurial behavior, with organizational arrangements influencing whether competencies translate into practice (14). Where professional standards and mentoring are weak, teachers struggle to design authentic tasks, broker school–industry partnerships, and assess complex outcomes like creativity and financial literacy (15, 16). These challenges are compounded when entrepreneurial teaching is delegated to non-specialists or positioned as an elective without coherent progression, reducing status and continuity across grades (17, 18).

A robust curriculum for EE requires alignment among aims, content, learning experiences, and assessment, under conditions of policy stability and resource adequacy (7, 8). Yet misalignments remain common: content may be overly theoretical, detached from local opportunity structures, or insufficiently scaffolded for adolescents' cognitive development (19, 20). Studies highlight gaps in financial literacy, digital entrepreneurship skills, and interdisciplinary integration, which limit the transfer of learning beyond the classroom (16, 21). In many contexts, implementation is further constrained by infrastructure deficits, limited budgets, and a shortage of up-to-date instructional resources, all of which reduce opportunities for project-based and community-embedded learning (22, 23). Without targeted resourcing and teacher support, entrepreneurship courses can devolve into abstract lectures, missing the formative potential of practice-rich experiences (10, 24).

Pedagogically, the literature converges on experiential, inquiry- and project-based designs as signature modalities for EE in secondary schools (5, 25). Collaborative project-based learning (PBL) has been shown to foster creativity, collective problem solving, and agency when paired with authentic briefs, iterative prototyping, and formative feedback (24, 26). Playful design jams and challenge-based tasks can nurture critical thinking and collaborative creativity, especially when assessment privileges process, reflection, and evidence of skill acquisition over rote recall (6, 26). Still, PBL's effectiveness depends on teacher facilitation skills, time allocation, and access to materials and community mentors; without these, projects risk becoming superficial or inequitable across schools (11, 27). As programs scale, coherent assessment frameworks aligned to competency descriptors (e.g., opportunity recognition, financial decision-making, ethical reasoning) are essential to maintain rigor and comparability (8, 28).

Learner-level pathways into entrepreneurship are shaped by motivation, self-efficacy, fear of failure, and evolving vocational identities (29, 30). Research on career adaptability connects classroom experiences to exploration and agency, suggesting that EE can scaffold adaptability resources that generalize beyond venture creation (31). Conversely, poorly designed experiences may amplify fear of failure or reinforce narrow, transactional views of entrepreneurship, undermining inclusive participation (30, 32). Programs that explicitly address socio-emotional factors, normalize iteration, and integrate formative assessment can mitigate these risks while broadening participation for diverse learners, including those outside traditional business tracks (16, 33). Purposeful career education elements—market scanning, networking, and reflective portfolios—further connect classroom learning to evolving opportunity landscapes (1, 31).

Teacher development is a pivotal lever. Frameworks that define entrepreneurial teacher competencies—opportunity alertness, design of authentic tasks, partnership brokering, and reflective practice—provide a blueprint for targeted pre-service and in-service programming (15, 34). University-based teacher education and teacher-training institutions can embed EE across coursework and practicums, moving beyond one-off workshops toward longitudinal, practice-embedded capacity building (35, 36). Studies from varied contexts indicate that continuous professional learning, peer networks, and exposure to practicing entrepreneurs enhance teachers' self-efficacy and pedagogical repertoire (10, 37, 38). At the same time, institutional management and incentives play a mediating role: supportive leadership, recognition systems, and autonomy can catalyze entrepreneurial teacher behavior, whereas bureaucratic constraints and unstable mandates suppress it (11, 14). These dynamics underscore the need to treat EE not as an add-on but as a whole-school strategy with aligned governance and evaluation (2, 18).

The ecosystem beyond the school gates matters. Partnerships with local businesses, universities, incubators, and civic organizations enrich EE by supplying mentors, problem contexts, and pathways for internships and venture projects (18, 39). Undergraduate studies demonstrate that awareness of entrepreneurial opportunities within programs of study increases when curricula are intentionally mapped to ecosystem assets, a principle that can be translated to secondary education through community-based projects and cross-sector events (40, 41). National and regional policy frameworks that articulate future-ready skills and provide curricular guidance (e.g., OECD Skills for 2030) help systems maintain coherence amid rapid change (7). In contexts where digital transformation is reshaping markets, integrating AI-supported authoring, simulation, and analytics within learning management systems can scaffold entrepreneurial learning and feedback at scale, provided that pedagogy—not technology—remains primary (21, 41). Aligning these layers—policy, school leadership, teacher learning, curriculum, assessment, and external partnerships—constitutes the systems challenge of EE (2, 3).

Local implementation research reveals persistent structural barriers. Analyses of secondary-level "Entrepreneurship and Production Workshop" courses point to resource constraints, limited teacher specialization, and disconnects between textbooks and students' lived realities, leading to uneven enactment and low perceived relevance (19, 20). Broader curriculum studies echo these findings, documenting practical barriers in policy roll-out and subsystem coordination that blunt the intended transformation (22, 42). Qualitative and mixed-methods inquiries have mapped teacher mindsets, cultural enablers, and organizational factors that either cultivate or inhibit entrepreneurial culture in schools and vocational centers (17, 43). Collectively, this evidence suggests that sustainable improvement requires concurrent attention to curriculum coherence, teacher capacity, assessment literacy, and reciprocal ties with local industry and community (23, 39).

From a design perspective, effective secondary EE integrates three strands: (1) conceptual foundations—economics of value creation, opportunity recognition, ethical and social entrepreneurship; (2) methodological tools—market research, prototyping, pitching, and basic financials; and (3) transversal competencies—creativity, collaboration, resilience, and reflective learning (5, 6). Instructionally, this implies sequenced modules that culminate in authentic capstones, assessed through performance

tasks, rubrics, and portfolios aligned to national competency frameworks (8, 28). To reduce inequities, content should be localized—linking tasks to community needs and regional industries—while ensuring access to digital tools and mentors (21, 23). Institutional management should support teacher experimentation, allocate protected project time, and broker partnerships, thereby lowering the transaction costs of high-quality PBL (11, 14). Finally, addressing affective dimensions—normalizing iteration, reframing failure, and cultivating agency—can broaden participation and sustain motivation (29, 30).

Research gaps persist. While cross-national syntheses and university-level studies are growing, there remains a need for contextually grounded investigations into how secondary teachers interpret, adapt, and enact EE under real-world constraints (2, 44). Emerging work on institutional management and teacher behavior calls for deeper qualitative insight into the lived experiences of teachers navigating policy expectations, resource limitations, and diverse learner needs (14, 16). Studies on curriculum implementation and teacher perceptions in primary and secondary contexts further underline the importance of attending to teacher voice, school culture, and professional learning ecosystems when designing improvement strategies (27, 45). In addition, the intersection of digital transformation and EE—spanning AI-enabled content authoring, simulation, and data-informed feedback—requires research that centers pedagogy and equity, not just tools (21, 41). Taken together, these strands support phenomenological and interpretive designs that surface practice-proximal insights for policy and program refinement (18, 46).

In light of these considerations, the present study adopts a qualitative phenomenological approach to explore the lived experiences of secondary-school teachers who deliver the “Entrepreneurship and Production Workshop” course

Methods and Materials

This study employed a qualitative approach using phenomenological methodology with the aim of gaining a deep understanding and interpreting the lived experiences of teachers of the “Entrepreneurship and Production Workshop” course in the upper secondary theoretical schools of Tehran regarding the challenges and strategies for implementing this curriculum.

The study population comprised all teachers employed in districts 6, 9, 11, and 18 of Tehran who taught this subject. Participants were selected using purposive sampling based on the criterion of theoretical saturation. In total, 17 teachers who had at least one year of teaching experience in this course and expressed willingness to participate took part in the study. Theoretical saturation was achieved when, after interviewing 17 teachers, no new information emerged and the extracted patterns were repeated.

Data collection was conducted through semi-structured interviews. The content of these interviews was transcribed verbatim and analyzed using inductive content analysis. The analysis process included full transcription of the interviews, repeated reading of the texts, extraction and initial coding, organization of codes into conceptual clusters, review and integration of subthemes, identification of main themes, and finally, member checking with participants to confirm the validity of the findings.

To enhance the study’s credibility, strategies such as participant validation of findings and continuous review of codes were employed. Additionally, throughout the analysis process, the researchers made deliberate efforts to avoid the influence of their own preconceptions and biases to preserve the authenticity of the participants’ experiences.

The following table presents the demographic characteristics of the participants.

Table 1. Participant Characteristics

Interviewee No.	Education Level	Educational Stage	Field of Study	Years of Service
1	Master’s	Upper Secondary	Social Sciences Research	15
2	Master’s	Upper Secondary	Mathematics	17
3	Master’s	Upper Secondary	Applied Mathematics	29
4	Master’s	Upper Secondary	History	29

5	Bachelor's	Upper Secondary	Physics	31
6	Bachelor's	Upper Secondary	Physical Education	30
7	Master's	Upper Secondary	Arabic	31
8	Bachelor's	Upper Secondary	Mathematics	25
9	Master's	Upper Secondary	Persian Literature	29
10	Master's	Upper Secondary	Chemistry	20
11	Master's	Upper Secondary	Psychology	8
12	Bachelor's	Upper Secondary	Physics	31
13	Master's	Upper Secondary	Physics	3
14	Bachelor's	Upper Secondary	Physical Education	17
15	Bachelor's	Upper Secondary	English Language and Literature	23
16	Master's	Upper Secondary	Arabic	14
17	Bachelor's	Upper Secondary	Mathematics	29

Findings and Results

The findings of this study shed light on the various dimensions of the challenges and strategies for improving entrepreneurship education in upper secondary schools from the perspective of teachers of the "Entrepreneurship and Production Workshop" course. These findings are categorized into two main areas: first, structural and operational barriers affecting the effectiveness of this curriculum; and second, strategies proposed by teachers to enhance the quality of implementation and achieve educational objectives. Each of these areas is introduced in detail and analyzed in light of previous studies.

Table 2. Teachers' Competence in Entrepreneurship: Expertise, Experience, Awareness

Overarching Theme	Organizing Themes	Basic Themes	Interview Codes
Teachers' competence in entrepreneurship: expertise, experience, awareness	Need for specialized human resources	Need for teachers specialized in entrepreneurship	1, 3, 5, 10, 12, 13
		Assigning the course to non-specialist teachers to fulfill teaching hours	11, 14, 17, 3
		Necessity of specialized training for entrepreneurship teachers	13, 5, 7, 9
		Importance of specialized human resources	5, 7, 4, 12, 17
		Need to pay attention to entrepreneurship teachers	17
	Practical and entrepreneurial experience of teachers	Personal entrepreneurship experience	2, 17, 3
		Integrating theoretical and practical knowledge	5, 13
		Understanding business trends	5, 17, 2
		Up-to-date knowledge and awareness of economic changes	2, 14, 9
	Educational structures and policies	Weakness in human resource planning	11, 7, 17, 8
		Lack of clear recruitment and training pathways for teachers	1, 17, 6, 4
		Misalignment of training with labor market needs	3, 14

Table 3. Infrastructure and Resources for the Entrepreneurship and Production Workshop Curriculum

Overarching Theme	Organizing Themes	Basic Themes	Interview Codes
Educational, financial, technological, and networking limitations in implementing the entrepreneurship curriculum	Shortage of physical and educational infrastructure	Weak physical facilities and equipment in schools	1, 3, 5, 7, 9, 11, 13, 15, 17
		Lack of raw materials and instructional tools	2, 4, 6, 8, 10, 12, 14, 16
		Weak digital and technological infrastructure	13, 10, 4

Financial and budgetary challenges	Budget constraints in public schools	1, 2, 3, 5, 7, 10, 11, 12, 14, 17	
		Limited financial support for entrepreneurship education	2, 4, 8, 12, 14, 16
Weak educational and technological resources	Lack of standardized instructional materials	1, 3, 5, 7, 10, 13, 17	
		Shortage of updated educational resources	4, 6, 8, 9, 10
		Limited access to educational technologies	3, 5, 9, 13, 17
Educational equity and access to resources	Inequality in resource and facility allocation	6, 10, 12, 17	
Limitations in school–industry–community collaboration	Lack of effective partnerships with entrepreneurs	3, 5, 7, 9, 11, 13, 17	
		Weak links between schools, industry, and universities	5, 9, 13, 17

Table 4. Necessity of Designing and Implementing a Comprehensive Teacher Training System in Entrepreneurship with Emphasis on Effective Capacity-Building Programs

Overarching Theme	Organizing Themes	Basic Themes	Interview Codes
Necessity of designing and implementing a comprehensive teacher training system in entrepreneurship with emphasis on effective capacity-building programs	Challenges in teacher preparation and empowerment systems	Weak planning in teacher professional development	1, 5, 4
		Lack of macro-level policymaking in teacher empowerment	2, 1
		Absence of evaluation and quality monitoring for in-service training	4, 12
Requirements for teachers' professional development	Continuous learning and alignment of teacher training with labor market changes	3, 17, 10	
		Designing training programs based on teachers' real needs	5, 9, 6
		Creating dynamic professional learning platforms	7, 16, 15
		Strengthening professional networks	9, 11
		Offering continuous pre-service and in-service training	11, 15, 17
Innovations in entrepreneurship teaching methods	Utilizing lived experiences of entrepreneurs	13, 2, 4	
		Developing a comprehensive model for teacher capacity-building	14, 17
		Applying experiential and project-based learning approaches	17, 3, 5

Table 5. Misalignment of Curriculum Content with Students' Real Needs, Educational Goals, and Environmental Changes

Overarching Theme	Organizing Themes	Basic Themes	Interview Codes
Misalignment of curriculum content with students' real needs, educational goals, and environmental changes	Lack of alignment of content with learners' needs and environmental changes	Incompatibility of textbook content with students' cognitive development level and needs	1, 2, 5, 6, 10, 11, 12
		Ineffectiveness of content in addressing economic and technological changes	2, 3, 5, 12

		Weak linkage of educational content with real-life and market needs	4, 9
		Neglect of teaching economic skills and financial literacy	7
		Absence of digital skills training and modern income-generation methods	10
Weakness in concreteness, visual appeal, and content balance	Abstractness of content	9, 3, 9	
		Lack of visual attractiveness in textbooks	6, 12, 13
		Imbalance and overload of theoretical materials	6, 12
		Dominance of theoretical content over practical and interactive learning	6, 7
		Insufficient hands-on exercises	4, 2
Inconsistency of textbook content with educational goals and system structure	Lack of integration between entrepreneurship content and other secondary school subjects	5, 6, 9, 13	
		Misalignment of textbook content with secondary education goals	1, 3, 10
		Marginalization and low prioritization of entrepreneurship education in the formal education system	13, 14
		Incompatibility of content with schools' operational capacities	17
Necessity of revising and updating the entrepreneurship textbook	Need to review and update the textbook in accordance with current developments	8, 11	
		Weak connection between theoretical knowledge and practical experience	3, 14
		Difficulty in practical implementation of textbook content and misalignment with real labor market needs	15, 13

Table 6. Strategies for Implementing the Entrepreneurship Curriculum

Overarching Theme	Organizing Themes	Basic Themes	Interview Codes
Strategies for successful implementation of the entrepreneurship curriculum	Policy development and institutional support	Defining the official status of the entrepreneurship course	3, 1, 12
		Creating a stable executive structure	5, 8
		Coordination among relevant institutions	9, 11
		Sustainable financing for course implementation	7, 15
	Training specialized human resources	Training teachers in Farhangian University	4, 14, 13
		Recruiting and employing competent teachers	3, 5, 12
		Conducting specialized in-service training programs	1, 4, 6, 8
		Enhancing teachers' professional competencies	17, 2
	Flexibility in content and teaching	Developing practical and skill-based content	11, 7, 6, 5
		Continuous updating of instructional resources	13, 2, 4
		Removing unnecessary content and emphasizing practicality	4, 14
		Designing content tailored to local and contextual needs	6, 8, 9
		Integrating the entrepreneurship course with other subjects	2, 3, 15
	Continuous monitoring and evaluation	Monitoring teaching quality and teacher performance	8, 12, 10

		Ongoing assessment of curriculum impact	7, 15, 12
		Evaluating students' performance based on skill acquisition	10, 11, 9
		Reducing emphasis on written examinations	1, 6, 9, 7
		Need for supervision of entrepreneurship course implementation	3, 5
	Community and industry engagement	Establishing connections between schools and businesses	2, 4, 6
		Inviting successful entrepreneurs to share experiences	9, 12, 15
		Planning scientific field visits to companies and industries	13, 16, 10
		Aligning training with community needs	2, 4, 8, 13
	Enhancing the position of the entrepreneurship course in the education system	Deciding on the textbook's status (removal or major revision)	5, 4, 7
		Increasing instructional hours for this course	8, 10, 16, 12
		Changing the course status from elective to mandatory	13, 14, 5, 3
		Introducing entrepreneurship education from elementary levels	10, 11, 13, 5
		Organizing scientific visits and internships in companies	2, 6, 12, 16

Discussion and Conclusion

The results of this study revealed that teachers experience the implementation of the "Entrepreneurship and Production Workshop" course as a complex and multi-layered process shaped by structural, curricular, and professional factors. One of the most salient findings was the insufficient entrepreneurial and practical competence of teachers, which limits their ability to translate curricular goals into meaningful classroom experiences. Participants repeatedly emphasized that the course is often assigned to non-specialist teachers simply to fulfill teaching hours, and those instructors lack both theoretical grounding in entrepreneurship and personal entrepreneurial experience. This observation echoes international evidence showing that entrepreneurship education (EE) quality is deeply dependent on teacher expertise and identity (11, 12, 15). Studies indicate that teachers with entrepreneurial knowledge and opportunity recognition skills design richer experiential learning, whereas others revert to traditional didactic methods (10, 34). The lack of specialized pre-service and in-service preparation identified by our participants parallels previous Iranian findings on the "Entrepreneurship and Production Workshop" course, where weak teacher development structures were found to inhibit pedagogical innovation (20, 47).

Another core challenge concerned infrastructure and resource constraints, including outdated or abstract textbooks, insufficient materials, and limited access to technology and industry partnerships. Teachers reported that the official curriculum is overly theoretical and detached from real-life entrepreneurial practices. These results align with the global literature that critiques entrepreneurship curricula for excessive abstraction and inadequate scaffolding for adolescents' developmental levels (8, 9). Scholars have warned that entrepreneurship content must move beyond static business definitions toward locally relevant, opportunity-driven learning (21, 23). Similar to our participants' concerns, Ranta and colleagues found that future teachers felt unprepared to deliver financial literacy and digital entrepreneurship skills due to limited curricular resources (16). Project-based and design-driven approaches can mitigate this gap by linking theory to authentic problem solving (25, 26), yet teachers in our study noted they lacked equipment, funding, and institutional support to implement such methods effectively.

The findings also highlight systemic and policy-level gaps. Teachers perceived a lack of coherent national strategy and clear pathways for teacher recruitment, capacity building, and evaluation. This systemic fragmentation resonates with analyses of curriculum change implementation in multiple contexts, where misaligned policy signals and unstable support mechanisms reduce teachers' confidence and willingness to innovate (7, 27, 45). Our data support calls for a whole-school and system-level perspective on entrepreneurship education (2, 18). Without sustained policy commitment, dedicated resources, and robust evaluation frameworks, EE risks marginalization—as several participants observed regarding the peripheral status of the "Entrepreneurship and Production Workshop" course. This echoes findings by Yarmohammadzadeh and colleagues who documented how weak systemic integration constrains entrepreneurship culture in technical and vocational schools (17).

Teachers in this study proposed practical solutions that resonate strongly with the improvement strategies described in the literature. At the policy level, they advocated for elevating the status of the course, making it mandatory, and ensuring stable funding. This recommendation parallels evidence that structural legitimacy and policy clarity enhance teachers' professional motivation and student engagement (3, 44). They also called for the continuous revision and localization of content, aligning with studies emphasizing that entrepreneurship curricula should reflect local economies, community needs, and technological shifts (39, 42). Likewise, their emphasis on integrating practical skill development, digital literacy, and financial knowledge mirrors international research underscoring the need for competency-based and future-oriented EE (5, 16).

In terms of pedagogy, participants stressed the importance of moving from theory-driven instruction toward experiential and project-based learning. This is consistent with Wu's work showing that project-based learning enhances entrepreneurial self-efficacy and opportunity recognition (25) and with Tang's findings that playful, collaborative design fosters critical thinking and creativity (26). However, to implement these strategies effectively, teachers need time, training, and access to local entrepreneurial networks—conditions not yet adequately met. Similar barriers were observed in Iranian and cross-national contexts where teachers expressed difficulty mobilizing authentic community resources due to weak policy-level partnerships (20, 23).

Professional development emerged as a central lever for change. Teachers requested sustained in-service training tied to real entrepreneurial practice, mentorship from experienced entrepreneurs, and platforms for peer learning. These recommendations echo frameworks for entrepreneurial teacher competencies that advocate integrating theoretical and applied training (15, 34, 35). Exposure to entrepreneurial ecosystems and continuous reflective practice have been shown to increase teachers' self-efficacy and reduce the fear of failure that can inhibit innovative teaching (14, 30). Participants' insistence on dynamic professional learning is also supported by evidence that networks and collaborative inquiry among teachers strengthen implementation fidelity (10, 37).

Finally, the study illuminates the interplay between institutional management and teacher behavior. Schools that provide autonomy, recognize entrepreneurial teaching, and build partnerships with external stakeholders create a climate conducive to innovation (11, 14). Conversely, bureaucratic or exam-driven environments—mirrored in teachers' critique of overreliance on written testing—stifle creative curriculum enactment. Scholars have noted that aligning assessment with entrepreneurship competencies rather than rote knowledge is essential (8, 28). Our teachers' calls to reduce written exam emphasis and assess applied skills are fully consistent with these findings and signal a readiness to shift toward competency-based evaluation if structural support is provided.

Taken together, the discussion underscores that implementing entrepreneurship education at the secondary level is not only a matter of curricular content but an ecosystem challenge requiring coherent policy, capable teachers, supportive school leadership, and resourceful community networks. The lived experiences of teachers in this study enrich the international conversation by adding granular insight into how systemic fragmentation, underdeveloped teacher competencies, and outdated

materials interact to hinder entrepreneurial learning—and how practitioners themselves envision feasible pathways to improvement.

This study, while providing rich insight into teachers' lived experiences, has several limitations. First, it was conducted in a single metropolitan context and included teachers from a limited set of urban districts; therefore, findings may not capture the diversity of conditions in rural or less resourced settings where infrastructural challenges and local industry linkages differ. Second, the study relied on self-reported experiences and perceptions, which can be influenced by personal biases, selective recall, or a desire to present one's practice favorably. Although member checking was used to enhance credibility, observational or documentary evidence could have provided additional triangulation. Third, the qualitative phenomenological approach, while offering depth, does not permit generalization to the entire population of secondary teachers. The sample size, though adequate for reaching theoretical saturation, limits statistical representativeness. Finally, the study focused exclusively on teachers; the perspectives of students, school leaders, and policymakers were not directly included, which may restrict the systemic comprehensiveness of the findings.

Future investigations could adopt multi-stakeholder and multi-site designs to capture a broader range of experiences and contextual influences, including rural and semi-urban schools and diverse educational governance systems. Comparative studies across provinces or countries with different policy frameworks could illuminate how structural supports and cultural contexts shape entrepreneurship education enactment. Mixed-method approaches that integrate classroom observation, artifact analysis, and longitudinal tracking of student outcomes would enrich understanding of how teacher perceptions translate into actual instructional practices and learner competencies. Additionally, research should explore the impact of digital transformation on entrepreneurship teaching, including how AI-driven tools, virtual simulations, and online mentorship can support resource-constrained schools. Evaluative studies of professional development interventions specifically tailored to entrepreneurial competencies would also help identify scalable, evidence-based teacher training models.

Practitioners and policymakers can leverage these findings by strengthening the professional pipeline for entrepreneurial teachers, ensuring pre-service programs and continuous in-service training integrate both theory and applied entrepreneurial practice. Curricular reform should emphasize contextual relevance, digital literacy, and practical skill-building, with assessment frameworks realigned to measure competencies rather than memorization. Schools should foster partnerships with local industries, entrepreneurs, and higher education institutions to provide mentorship, materials, and authentic learning experiences. At the policy level, elevating the formal status of entrepreneurship courses, securing stable funding, and clarifying governance responsibilities would reduce fragmentation and empower teachers to innovate. Finally, school leaders can cultivate a supportive culture by granting instructional autonomy, encouraging experimentation with project-based learning, and recognizing entrepreneurial teaching achievements.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

All ethical principles were adhered in conducting and writing this article.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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