

Innovating Entrepreneurship Education in The Era of Generative AI (Gai): A Qualitative Synthetic Study

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Abstract: The emergence of Generative Artificial Intelligence (GAI), exemplified by large language models such as ChatGPT, has catalyzed a revolutionary shift in higher education, particularly within the domain of entrepreneurship education (EE). This paper presents an in-depth qualitative synthetic study aimed at analyzing how GAI is fundamentally reshaping the entrepreneurship training ecosystem by transforming instructional models, curricular structures, and the psychological mechanisms of learners. The research findings indicate that GAI functions as a strategic "Copilot," assisting students in opportunity recognition, the optimization of business model canvases (BMC), and the simulation of real-world scenarios with unprecedented efficiency. A critical discovery of this study is that GAI significantly mitigates the "psychological distance" toward entrepreneurship, rendering abstract business goals more concrete, feasible, and immediate through cognitive and experiential support mechanisms. However, the study also cautions against systemic risks, including data "hallucinations," the potential erosion of critical thinking due to over-reliance, and challenges concerning academic integrity. The paper proposes an integrated pedagogical framework that emphasizes a sustainable symbiosis between humans and AI, where technology serves to amplify creative capacity rather than replace independent human judgment. The study concludes that entrepreneurship education must transition from passive knowledge transmission to experiential competency development grounded in AI literacy and entrepreneurial ethical responsibility.

Keywords: Entrepreneurship Education, Generative AI (GAI), ChatGPT, Psychological Distance, Entrepreneurial Competencies, Educational Innovation.

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I. Introduction

Artificial Intelligence (AI) has evolved from a supplementary technological tool into a core force driving fundamental changes in how new ventures are conceived, operated, and developed within the Fourth Industrial Revolution. In this context, entrepreneurship education (EE) faces increasing pressure to redesign its frameworks to meet the talent demands of a volatile digital economy. The arrival of Generative AI (GAI) does not merely introduce new educational tools; it redefines the very logic of the educational ecosystem, from curriculum design to assessment methods. While business schools have begun integrating AI, a significant gap remains in understanding the precise mechanisms through which AI affects students' entrepreneurial mindset and capabilities. This paper aims to synthesize contemporary research findings to provide a comprehensive view of the transition from passive knowledge-based models to AI-supported experiential competency training, identifying the psychological mechanisms that trigger entrepreneurial behavior in this new landscape.

II. Research Methodology

This study employs a theoretical synthesis and qualitative content analysis methodology based on a dataset of 44 authoritative academic sources published primarily between 2019 and 2026. The research process involved categorizing prominent themes identified through systematic literature reviews (SLR) and analyzing key theoretical frameworks such as the Stimulus-Organism-Response (S-O-R) model, the Prospecting and Establishing Nexus (PEN) framework, and the Theory of Planned Behavior (TPB). Data extraction focused on variables related to AI's impact on entrepreneurial competencies, behavioral intentions, and ethical barriers within academic environments. Empirical evidence from diverse geographic contexts, including the United States, China, Vietnam, and Europe, was cross-referenced to derive generalized conclusions regarding this educational innovation.

III. Theoretical Foundations Of GAI In Entrepreneurship Education

The integration of GAI into entrepreneurship education requires a multi-dimensional theoretical lens to explain the complex interactions between technology and human cognition. The Stimulus-Organism-Response (S-O-R) model serves as a vital foundation, where GAI acts as a technological stimulus that impacts the internal psychological state of the learner (the organism), such as entrepreneurial identity aspiration and digital self-

efficacy, ultimately leading to actual entrepreneurial behavioral responses. Complementing this, the PEN (Prospecting and Establishing Nexus) framework provides a structure to link the exploration of AI's novel creative possibilities with the establishment of solid theoretical foundations for venture creation programs (VCPs), allowing GAI to function as a reflective partner in meaning-making.

Furthermore, Construal Level Theory (CLT) provides a psychological mechanism to explain how GAI reduces the "psychological distance" students feel toward entrepreneurship. According to CLT, GAI helps transform abstract and distant business concepts into specific, high-feasibility tasks, making entrepreneurship feel more "proximal" in a cognitive sense. The Entrepreneurial Event Model (EEM) is also utilized to analyze how GAI and AI literacy influence perceptions of desirability and feasibility in founding digital enterprises. Finally, the Technology Acceptance Model (TAM) elucidates the roles of perceived usefulness and ease of use in forming the intention to utilize GAI to optimize the entrepreneurial process. The synergy of these frameworks creates a robust logical system for studying the comprehensive impact of GAI on learners.

IV. The Multi-Dimensional Role Of GAI: A Synthesis Of Research Findings

In modern entrepreneurship education, GAI has transitioned from a mere tool into a "strategic Copilot" or "thinking partner" capable of continuous adaptation to the personalized learning paths of students. Empirical studies indicate that large language models like ChatGPT can automate 30% to 75% of the workload related to repetitive operational tasks, such as primary literature research, basic customer service, and raw data processing. This capability provides a dual benefit: it frees up students' cognitive resources to focus on high-value creative activities and strategic decision-making, while also allowing them to penetrate markets faster by optimizing data-driven processes. Particularly in building the Business Model Canvas (BMC), students utilize GAI to sharpen segments requiring deep research, such as key resources, main activities, and value propositions, resulting in business plans that are more logical and persuasive to potential investors.

One of the most ground-breaking contributions of GAI in EE is its ability to significantly reduce the "psychological distance" between students and the real world of entrepreneurship, which is often perceived as too remote or risky. By using AI to create simulated customer interaction scenarios, real-time competitor analyses, and complex financial forecasts, cognitive barriers are gradually dismantled. When students feel that business tasks are "reachable," they tend to exhibit stronger "entrepreneurial hustle"—a persistent effort and high commitment to their projects. The simultaneous increase in AI literacy and digital self-efficacy creates a positive psychological impact chain: high AI awareness leads to confidence in mastering the technology, which drives intention and ultimately actual entrepreneurial behavior with high intensity.

Regarding the development of core competencies under the EntreComp framework, GAI has been proven to have the strongest impact on skills such as opportunity recognition, strategic thinking, and idea valuation. The ability to engage in continuous "learning-by-conversing" with AI helps students overcome "blank page anxiety," stimulating combinational creativity by connecting ideas across different fields that individual intelligence might struggle to encompass. Furthermore, participating in AI-supported experiential projects helps students train their critical thinking as they must learn to ask the right questions, filter information, and adjust machine outputs to fit local contexts and business ethics. These results confirm that GAI not only enhances learning performance but also nurtures a generation of entrepreneurs capable of flexible adaptation in a volatile digital economy.

V. Challenges, Risks, And Ethical Governance In AI-Integrated Ee

Despite the overwhelming advantages, the integration of GAI into entrepreneurship education introduces serious cognitive and pedagogical challenges that, if not managed well, can be counterproductive. The most prominent risk is the phenomenon of AI "hallucinations," where systems generate non-existent information or outdated data due to a lack of real-time access, leading to severe distortions in students' market analysis or financial projections. Over-reliance on these automated tools can lead to "cognitive offloading" or intellectual laziness, eroding the capacity for independent problem-solving and business intuition—qualities that are the hallmarks of a true entrepreneur. Many scholars warn of the "Copilot Paradox": when AI is too effective, it may inadvertently stifle human exploratory creative efforts and lead to homogenized business solutions that lack distinctiveness.

Academic ethics and algorithmic bias are also major hurdles that must be addressed within university environments. GAI models are often trained on historical datasets that carry inherent gender, cultural, or social biases, which can produce unfair business advice or reinforce harmful stereotypes. Additionally, the ambiguity between using AI as a creative assistant and engaging in "AI plagiarism" poses significant difficulties for instructors in fairly evaluating student performance. Concerns regarding data privacy and cybersecurity when interacting with large AI platforms also cause "technology anxiety" among some students, hindering them from fully exploiting the technology's potential.

Finally, the symbiosis between human intelligence and artificial intelligence (the Human-AI Dyad) needs to be redefined sustainably. Research emphasizes that while AI can process data at incredible speeds, the

"human touch" in empathizing with customers, building social networks, and making strategic decisions under conditions of extreme uncertainty remains irreplaceable. Entrepreneurship education should aim to train students to use AI to amplify their personal capabilities while maintaining independent judgment and upholding core ethical values. Establishing comprehensive AI policies at educational institutions to guide students on ethical responsibility and information security is an urgent requirement to ensure the long-term integrity and effectiveness of the educational innovation process.

VI. Discussion And Educational Proposals

The transformation of entrepreneurship education in the GAI era requires a systemic and flexible approach. Business schools need to restructure their curricula toward an experiential competency-based model where AI is not a separate elective but a foundational layer integrated throughout the learning journey. Project-based learning (PBL) and business simulations should be prioritized to give students opportunities to apply AI to real problems and understand both its strategic value and its limitations. The development of AI literacy must include four core pillars: understanding the technical nature, mastering the tools, critically evaluating machine output, and engaging in ethical interaction.

The role of the instructor must also be redefined from a knowledge provider to a facilitator and confidence coach. Instructors must guide students on how to interact critically with AI by asking probing questions and encouraging personalized forms of assessment that are difficult for AI to replicate. At the same time, policies regarding AI ethics and risk management must be integrated into the core of the curriculum to produce socially responsible entrepreneurs. The future of EE lies in a sustainable symbiosis where technology is used to enhance human intelligence rather than replace it.

VII. Conclusion

A synthesis of research confirms that GAI is opening a "new frontier" for entrepreneurship education, making learning more interactive, personalized, and closer to reality than ever before. The ability to reduce psychological distance and enhance BMC capabilities provides a significant competitive advantage, helping student entrepreneurs become more confident in realizing their ideas. However, the success of this innovation depends on the ability of educational institutions to design a learning ecosystem that balances technological performance with independent critical thinking. Equipping students with both "hard skills" in AI and "soft skills" in ethics, intuition, and resilience will be the key to training a capable generation of entrepreneurs ready to lead the volatile digital economy.

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