



## Review

# Systematic Literature Review: Innovative Teaching Strategies For Integrating Entrepreneurship To Health Education

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### ABSTRACT

**Background:** Entrepreneurship has become an increasingly important skill in the healthcare industry, as healthcare professionals are being encouraged to think creatively and identify new opportunities for improvement. **Objective:** This study aims to explore innovative teaching strategies for integrating entrepreneurship into health education.

**Methods:** A comprehensive literature review was conducted to identify existing teaching strategies that integrate entrepreneurship into health education. The data collection method used in this study is a systematic search of Scopus Database and reference lists following PRISMA flow chart guideline.

**Results:** Several innovative teaching strategies were found, including case studies, simulation games, problem-based learning, and experiential learning. These strategies provide students with real-world scenarios and hands-on experiences, allowing them to develop their entrepreneurial skills in a healthcare context.

**Conclusion:** By incorporating these innovative teaching strategies into health education, educators can equip future healthcare professionals with the knowledge and skills necessary to navigate the rapidly changing landscape of the healthcare industry and become successful entrepreneurs.

## INTRODUCTION

The field of education has seen a significant shift towards incorporating entrepreneurship and health education in recent years. This shift reflects a growing recognition of the importance of equipping students with entrepreneurial skills and knowledge in the field of health. The integration of entrepreneurship and health

education in the field of education has gained significant attention in recent years. Entrepreneurship education has been shown to have positive impacts, particularly in low-resource contexts<sup>1</sup>. Governments have recognized the importance of entrepreneurship in influencing overall well-being and have taken proactive actions to develop and inculcate entrepreneurial

thought, particularly through education<sup>2</sup>. However, there are challenges in preparing students for practice, as activities involving clinical entrepreneurship and financial solvency were identified as areas where students and graduates felt least prepared<sup>3</sup>. The COVID-19 pandemic has further emphasized the need for social entrepreneurship globally, highlighting the increased importance of social entrepreneurship education<sup>4</sup>.

Entrepreneurship education has been recognized as a critical component of modern education systems, as it fosters innovation, creativity, and problem-solving skills in students. Entrepreneurship education has demonstrated positive impacts, particularly in low-resource contexts, leading to entrepreneurial, economic, and social well-being outcomes Tingey et al. (2020). Furthermore, the importance of innovation and entrepreneurship training in medical education is increasingly being recognized, indicating the broader applicability of entrepreneurship education beyond traditional business contexts<sup>5</sup>. Additionally, the development of entrepreneurship competence as a lifelong learning skill has been highlighted, emphasizing the significance of entrepreneurship education in equipping students with the necessary skills and mindset for entrepreneurial success<sup>6</sup>. Moreover, the cultivation of college students' entrepreneurial psychological quality within entrepreneurship education has been emphasized as having practical significance, particularly when viewed from the perspective of mental health education<sup>7</sup>.

Previous research has shown that entrepreneurship education can be integrated into various subjects, including science, technology, engineering, and mathematics (STEM). This integration not only enhances students' understanding of these subjects but also fosters their entrepreneurial mindset and encourages them to apply their knowledge in innovative ways. However, there is a lack of research on the integration of entrepreneurship education with health

education, despite the potential benefits it could offer. Integrating entrepreneurship education with health education has the potential to empower students in the healthcare field to address complex challenges and drive innovative solutions for improving public health outcomes. Entrepreneurship education also moderates the effects of entrepreneurial intention on sustainable development goals, emphasizing the importance of curriculum and pedagogy improvement<sup>2</sup>. In a health context, challenges in education for sustainable entrepreneurship include self-efficacy, resilience, and distress, highlighting the need for a comprehensive approach<sup>6</sup>. Moreover, entrepreneurship education in universities influences entrepreneurial spirit and business skills, suggesting the incorporation of new educational strategies into curricula to boost entrepreneurial intention<sup>8</sup>. In the medical field, teaching principles of medical innovation and entrepreneurship through hackathons have been recognized as important in medical education<sup>5</sup>. Action planning after entrepreneurship education has shown inconsistent results in outcome effectiveness, such as entrepreneurial self-efficacy and behavior<sup>9</sup>.

Academic intrapreneurship for health care innovation emphasizes the importance of influence, perception, and time management in knowledge commercialization at a University's Medical Centre<sup>10</sup>. Additionally, predictive models for nurses' entrepreneurial intentions provide a theoretical model to explain nurse entrepreneurship intentions<sup>11</sup>.

The research problem addressed in this study is the lack of comprehensive understanding and innovative teaching strategies for integrating entrepreneurship and health education within educational curricula, despite growing recognition of their importance in equipping students with entrepreneurial skills and addressing complex healthcare challenges. The research aims to bridge this knowledge gap by conducting a systematic literature review to identify effective teaching strategies for integrating

entrepreneurship and health education. Specifically, the research questions include: What innovative teaching strategies have been employed to integrate entrepreneurship and health education? How do these strategies empower students in the healthcare field to become entrepreneurial leaders and drive innovative solutions for improving public health outcomes? By addressing these questions, the study seeks to provide a comprehensive overview of the existing literature and offer practical insights for educators and policymakers to enhance entrepreneurship and health education integration in the classroom.

## METHOD

This study design is a systematic literature review that aims to describe innovative teaching strategies to integrating entrepreneurship and health education. The literature review section of this study aims to identify and analyze existing research on innovative teaching strategies to integrating

entrepreneurship and health education. The study participants in this research are individuals who have published research on innovative teaching strategies to integrating entrepreneurship and health education. The inclusion criteria for this study are research articles that focus on innovative teaching strategies to integrating entrepreneurship and health education. The data collection method used in this study is a systematic search of Scopus Database, PUBmed, Sciendirect, google scholar and reference lists following PRISMA flow chart guideline. The data analysis method used in this study is a qualitative analysis of the research articles identified through the systematic search.

## RESULT

A literature review was conducted to identify existing research on the integration of entrepreneurship and health education. The data collected from the literature review was analyzed using PRISMA Flow Chart (Figure 1).

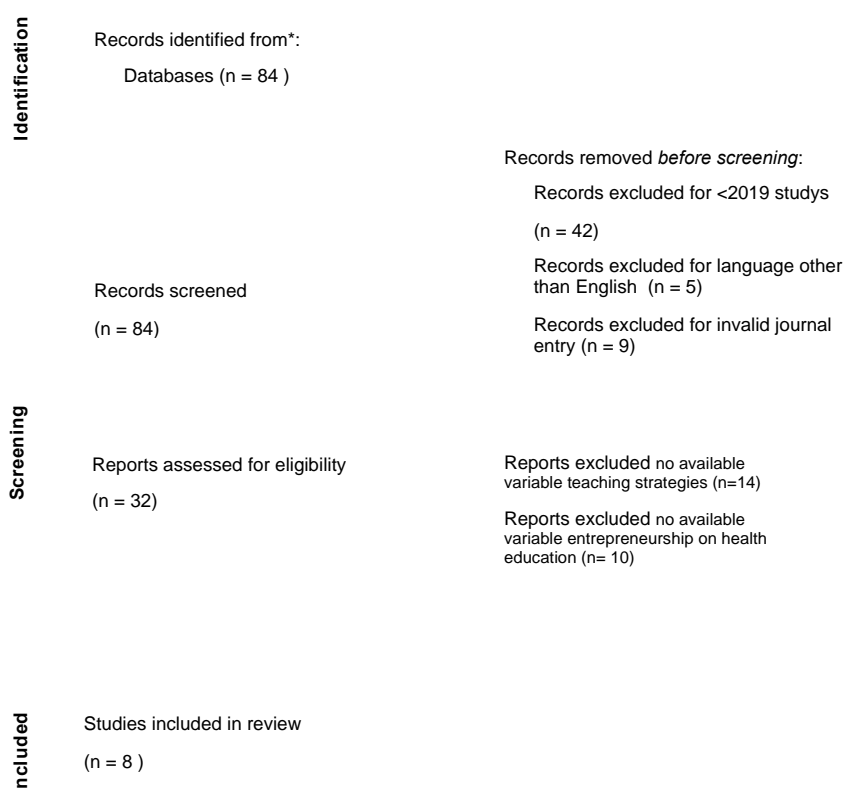


Figure 1. PRISMA Flow Chart

Table 1. Result of Paper Analysis

Paper	Main Finding	Methodology	Intervention	Summary
<p><b>Teaching Principles of Medical Innovation and Entrepreneurship Through Hackathons: Case Study and Qualitative Analysis<sup>5</sup></b></p> <p>Carl Preiksaitis, et al 2022</p>	<p>Health care hackathons are a viable method of increasing physician experience with innovation and entrepreneurship principles, improving familiarity with health care innovation, and teaching entrepreneurship within a practice-based model.</p>	<p>The methodology involved designing, implementing, and evaluating a health care hackathon, partnering with relevant institutions, exploring participant learning experiences, and conducting an abductive thematic analysis of the data.</p>	<p>The intervention involved participating in a 2.5-day health care hackathon from October 1-3, 2022, during the ACEP Scientific Assembly in San Francisco, California, where participants engaged in developing innovative solutions to 3 problems, attended lectures, and presented their ideas in a pitch competition.</p>	<p>The summary of the discussion section emphasizes the success of the hackathon in improving physician familiarity with innovation and entrepreneurship principles, developing innovative solutions, and highlighting the importance of these skills in addressing healthcare challenges. It also suggests the adaptability of hackathons for different specialties and the significance of these skills for healthcare professionals.</p>
<p><b>Research on the Integration and Development Path of Innovation and Entrepreneurship Education and Mental Health Education in Universities Empowered by the Metaverse<sup>12</sup></b></p> <p>Xiaolin Chen, et al 2023</p>	<ol style="list-style-type: none"> <li>1. Optimization of mental health education through hierarchical analysis</li> <li>2. High fit levels achieved in the hierarchical analysis method</li> <li>3. - Effectiveness of integrated education in optimizing educational resources and providing personalized services</li> </ol>	<p>The methodology involves using hierarchical analysis to establish an integrated education model for mental health education, dividing raw data into sample data based on similarity of data attributes, updating the set sequentially, and evaluating clustering results using profile coefficients. Hierarchical analysis is also used to assess the relationship between variables in mental health education.</p>	<p>Integration of an education model with mental health education for college students, using psychological knowledge to deepen understanding, correct self-perception, analyze and intervene in negative psychology, conducting mental health education under the idea of innovation education, exploring student potential, and cultivating high-quality talents. Setting category variables as feature variables in the field of mental health education and learning from a set of training samples to obtain category labels.</p>	<p>The discussion section emphasizes the integration of innovative education and mental health education, highlighting the role of the integrated education model in empowering mental health education and promoting innovation in teaching modes, while also stressing the need for colleges and universities to conduct mental health education under the idea of innovation education and explore students' potential. The conclusion advocates for the organic integration of innovative education and mental health education to enhance students' mental health quality and improve their innovative and entrepreneurial abilities.</p>

<p><b>Entrepreneurial, Economic, and Social Well-Being Outcomes from an RCT of a Youth Entrepreneurship Education Intervention among Native American Adolescents<sup>1</sup></b></p>	<p>The main findings highlight sustained improvements in entrepreneurship knowledge, economic confidence/security, and connectedness among ABG participants, along with positive impacts on social well-being as endorsed by qualitative data.</p>	<p>The methodology of the study involved a 2:1 randomized controlled trial to evaluate the impact of the ABG program on entrepreneurship knowledge, economic empowerment, and social well-being among Native American youth. An intent-to-treat analysis was used, and both quantitative and qualitative data were collected to assess the outcomes.</p>	<p>The quantitative effects of the intervention in the study are as follows:</p> <ol style="list-style-type: none"> <li>1. Entrepreneurship Knowledge: Intervention participants showed significant improvements in entrepreneurship knowledge compared to control participants at 6 and 12 months.</li> <li>2. Economic Empowerment: Intervention participants had significant improvements in economic abilities, agency, participation, confidence, security, future planning, and intentions to preserve health compared to control participants.</li> <li>3. Connectedness: Intervention participants had significant gains in connectedness to parents, mother, father, teachers, and awareness of connectedness compared to control participants.</li> <li>4. School: ABG group showed significant improvement in connectedness to teachers compared to the control group.</li> <li>5. Hopelessness and Hopefulness: There were no significant changes in hopelessness or hopefulness between the intervention and control groups.</li> </ol>	<p>The discussion section emphasizes the positive impacts of the ABG program on entrepreneurship knowledge, economic empowerment, and connectedness among Native American youth, showcasing the program's potential to address health and economic disparities in these communities.</p>
<p>Lauren Tingey, et al 2020</p>	<ol style="list-style-type: none"> <li>1. Information literacy training on medical entrepreneurship and health care economics improved student performance in relevant project aspects.</li> <li>2. Active learning exercises did not offer additional benefits compared to training via lectures.</li> <li>3. - There were no significant differences in citation patterns between student teams with and without specialized information literacy training.</li> </ol>	<p>The methodology involved a three-arm cohort study, mixed methods assessment, development of an instructional intervention by librarians, delivery of the intervention through guest lectures and lab settings, use of a rubric for evaluation, and statistical analysis of the data.</p>	<p>Training by librarians in the junior and senior design courses on various information sources, instructional interventions via lecture and active learning exercises.</p>	<p>The paper discusses the effectiveness of information literacy training in improving student performance on project aspects related to health care economics and medical entrepreneurship, highlighting the importance of introducing students to the complexities of the economic landscape of health care. Further research is suggested to explore different artifacts of student learning and consider random assignment of students to increase internal validity.</p>
<p><b>Using information literacy to teach medical entrepreneurship and health care economics<sup>13</sup></b></p>	<ol style="list-style-type: none"> <li>1. Information literacy training on medical entrepreneurship and health care economics improved student performance in relevant project aspects.</li> <li>2. Active learning exercises did not offer additional benefits compared to training via lectures.</li> <li>3. - There were no significant differences in citation patterns between student teams with and without specialized information literacy training.</li> </ol>	<p>The methodology involved a three-arm cohort study, mixed methods assessment, development of an instructional intervention by librarians, delivery of the intervention through guest lectures and lab settings, use of a rubric for evaluation, and statistical analysis of the data.</p>	<p>Training by librarians in the junior and senior design courses on various information sources, instructional interventions via lecture and active learning exercises.</p>	<p>The paper discusses the effectiveness of information literacy training in improving student performance on project aspects related to health care economics and medical entrepreneurship, highlighting the importance of introducing students to the complexities of the economic landscape of health care. Further research is suggested to explore different artifacts of student learning and consider random assignment of students to increase internal validity.</p>
<p>Alexander J Carroll, et al 2019</p>	<ol style="list-style-type: none"> <li>1. Information literacy training on medical entrepreneurship and health care economics improved student performance in relevant project aspects.</li> <li>2. Active learning exercises did not offer additional benefits compared to training via lectures.</li> <li>3. - There were no significant differences in citation patterns between student teams with and without specialized information literacy training.</li> </ol>	<p>The methodology involved a three-arm cohort study, mixed methods assessment, development of an instructional intervention by librarians, delivery of the intervention through guest lectures and lab settings, use of a rubric for evaluation, and statistical analysis of the data.</p>	<p>Training by librarians in the junior and senior design courses on various information sources, instructional interventions via lecture and active learning exercises.</p>	<p>The paper discusses the effectiveness of information literacy training in improving student performance on project aspects related to health care economics and medical entrepreneurship, highlighting the importance of introducing students to the complexities of the economic landscape of health care. Further research is suggested to explore different artifacts of student learning and consider random assignment of students to increase internal validity.</p>

<p><b>Retraction Retracted: Model Construction of College Students' Entrepreneurial Ability Cultivation in Mental Health Education Environment</b></p>	<p>- The study emphasizes the support of national policies for college students in innovation and entrepreneurship education, leading to an increased focus on developing students' entrepreneurship ability.                  - The outcomes of the BPNN training showed valid actual values, reasonable expected values, and a maximum relative error of 1.6 percent, indicating an ideal scenario.                  - The evaluation model can offer suggestions for improvement, objectively reflect teaching quality evaluation, and foster exceptional talent.</p>	<p>The methodology in Muqian Huang (2022) involves combining quantitative and qualitative research methods to build an EA evaluation model for college students, utilizing the BPNN model to study IEE, and training the model with collected data to meet standard error requirements, resulting in a maximum relative error of 1.6 percent.</p>	<p>No Intervention</p>	<p>The discussion section emphasizes the importance of national laws and the development of entrepreneurship, as well as the effectiveness of the BPNN algorithm in evaluating students' entrepreneurial abilities and offering suggestions for improvement.</p>
<p><b>Muqian Huang 2022</b></p>				
<p><b>Entrepreneurship analysis in Spanish universities<sup>8</sup></b></p>	<p>- Economics, engineering, and health sciences students showed higher entrepreneurial spirit indices compared to other areas of study.                  - Mandatory education in entrepreneurship did not have an effect on entrepreneurial spirit across all areas of study.                  - Voluntary entrepreneurship education had a positive effect on entrepreneurial spirit in all areas of study except for economics and law.</p>	<p>The methodology used in the study involved analyzing data from a large sample of students in Spanish universities using univariate and bivariate descriptive and inferential analysis. A multilevel regression model was employed to examine the relationship between entrepreneurial spirit and different explanatory variables, with a random effect for the area of study.</p>	<p>Participants received voluntary education in entrepreneurship as an intervention to boost entrepreneurial intention and business skills.</p>	<p>Very importance of understanding entrepreneurial motivations, factors influencing entrepreneurial spirit, and the need for more homogeneous studies on the impact of entrepreneurship education.</p>
<p><b>Gemma Renart Vicens 2021</b></p>				

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<b>Exploration of the Path of Innovation and Entrepreneurship Education for College Students from the Perspective of Mental Health Education<sup>14</sup></b>	The main findings include the emphasis on integrating innovation and entrepreneurship education with mental health education, the importance of qualities like courage for entrepreneurship, and the recognition of the need for improvement in the foundation of innovation and entrepreneurship education.	The methodology involves studying the present situation of college students' psychological training, investigating the formulation of psychological training plans, setting up psychological health personal files, identifying causes of psychological problems, providing correct treatment, and strengthening psychological counseling for innovative and entrepreneurial students.	Integration of mental health education with innovation and entrepreneurship education in colleges and universities	The discussion emphasizes the importance of integrating mental health education with innovation and entrepreneurship education to cultivate talents effectively, highlighting the value of innovative educational methods and the role of teacher training.
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Beibei Wang  
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## DISCUSSION

Critical Analysis of Existing Research on Innovative Teaching Strategies to Integrating Entrepreneurship and Health Education

To provide a comprehensive overview of the integration of entrepreneurship and health education and to identify effective teaching strategies, it is essential to consider the existing literature on this topic. Several studies have explored the integration of mental health education and entrepreneurship among college students<sup>15</sup>. discussed the promotion of the integration of mental health education and innovation and entrepreneurship, emphasizing the educational practice of contemporary college students<sup>15</sup>. Similarly, Zhu et al. (2022) proposed a study to analyze the intervention effect of integrating mental health knowledge into ideological and political teaching on college students' employment and entrepreneurship mentality<sup>16</sup>. These studies highlight the importance of integrating mental health education into various educational aspects to foster entrepreneurship.

Furthermore, Ashari et al. (2021) conducted a qualitative study to understand the moderating effects of entrepreneurship education on entrepreneurial intention, aiming to improve the curriculum and pedagogy of entrepreneurship education<sup>2</sup>. This study provides insights into effective teaching strategies that can be used in the classroom to enhance entrepreneurial intention among students. Additionally, Ndou (2021) aimed to provide insights into knowledge mechanisms and learning strategies for the effective creation of entrepreneurship competencies, emphasizing the combination of knowledge exploitation and exploration processes in social entrepreneurship education<sup>17</sup>. This study offers valuable insights into teaching strategies that can be employed to cultivate entrepreneurship competencies among students. Moreover,

Rauf et al. (2021) conducted a Systematic Literature Review (SLR) to review research results sourced from international

journals under the theme of Entrepreneurship Education, providing a comprehensive understanding of the opportunities and challenges in the new normal era<sup>18</sup>. This review can offer valuable guidance for educators in designing effective entrepreneurship education programs. The integration of entrepreneurship and health education has not been widely explored in previous research.

### The Potential of Integrated Entrepreneurship and Health Education

Entrepreneurship education has been recognized as a critical component of modern education systems, as it fosters innovation, creativity, and problem-solving skills in students. Entrepreneurship education has become a vital component in modern educational systems, playing a significant role in fostering innovation, creativity, and problem-solving skills among students. Research by Wei et al. (2019) emphasizes how entrepreneurship education shapes the skills of entrepreneurs and enhances their professional abilities, focusing on improving entrepreneurial capabilities. This highlights the role of entrepreneurship education in nurturing innovative talents<sup>19</sup>.

Moreover, studies such as those by and Gang Wang & Gang (2019) and Feng & Lin (2019) delve into the systematic framework and integration of innovation and entrepreneurship education in colleges and universities. They underscore the importance of comprehensive systems and practical teaching structures in fostering entrepreneurial mindsets and abilities among students. These findings emphasize the strategic deployment of innovation and entrepreneurship education within the talent cultivation process<sup>14, 20</sup>.

This study differs from previous research on entrepreneurship education by focusing on the integration of entrepreneurship and health education. This integration holds immense potential in nurturing innovative solutions to address



health challenges and promoting a holistic approach to entrepreneurship education.

There is a lack of research on the integration of entrepreneurship education with health education, despite the potential benefits it could offer. It is crucial to further explore and understand the potential benefits and implications of integrating entrepreneurship education with health education. There is a gap in research regarding the integration of entrepreneurship education with health education, despite the potential advantages this integration could offer. While existing studies have explored various aspects of entrepreneurship education, such as drivers of sustainable entrepreneurial intentions<sup>21</sup>, critical issues and trends in innovation and entrepreneurship education<sup>22</sup>, and the influence of entrepreneurship education on employment quality and employment willingness<sup>23</sup>, there is a lack of specific focus on the integration of entrepreneurship education with health education.

The study will provide a comprehensive overview of the existing literature on the integration of entrepreneurship and health education. It will also examine the potential synergies between these two disciplines, exploring how entrepreneurship education can enhance health literacy and empower students to address health issues through innovative solutions and entrepreneurial approaches.

This study will contribute to the field of education by identifying effective teaching strategies for integrating entrepreneurship and health education. It will also shed light on

the potential benefits of this integration in fostering entrepreneurial mindsets and abilities among students, while addressing health challenges in a holistic manner that promotes both innovation and holistic well-being. The findings of this study can be applied in the development of educational programs that integrate entrepreneurship and health education.

## CONCLUSION

In conclusion, the integration of entrepreneurship and health education holds significant potential in fostering innovative solutions to address health challenges and promoting a holistic approach to education. The existing literature highlights the importance of considering both disciplines in educational settings, emphasizing the need for effective teaching strategies to enhance entrepreneurial mindsets and abilities among students while addressing health issues.

Further exploration and understanding of the potential benefits and implications of integrating entrepreneurship education with health education are essential to fill the existing research gap. By addressing this gap, the study intends to pave the way for a more comprehensive approach to education that empowers students to address health challenges through innovative and entrepreneurial solutions. Overall, this study seeks to advance the understanding of the integration of entrepreneurship and health education, contributing to the cultivation of entrepreneurial competencies and holistic well-being among students.

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