# The Impact of Entrepreneurial Education in European Universities: A Comparative View of Methods and Practices

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***Abstract***

*In the context of a rapidly evolving global economy, higher education institutions are increasingly called upon to cultivate entrepreneurial mindsets and attitudes among students. This study explores how 14 universities from 13 European countries implement entrepreneurial education, analysing their strategies, methodologies, and institutional practices. Drawing on the HEInnovate framework developed by the European Commission and the OECD, the research employs a qualitative comparative analysis of institutional self-assessment reports to identify patterns, best practices, and challenges in fostering entrepreneurship within academia.*

*The study focuses on three key dimensions: integration of entrepreneurship into curricula, the role of extracurricular activities, and the scope of collaborations with external stakeholders. Findings reveal a shared commitment across universities to promote entrepreneurial thinking through interactive teaching methods - such as case studies, simulations, and project-based learning - and through diverse extracurricular initiatives like business plan competitions, mentoring programs, and start-up incubators. However, significant differences emerge in terms of institutional strategies, resource allocation, and regional approaches to entrepreneurship.*

*The study contributes to the theoretical understanding of entrepreneurial universities by linking educational practices to models, offering actionable recommendations for enhancing entrepreneurial ecosystems in higher education.*

**Keywords:** *Entrepreneurial mindset, Higher education institutions, Entrepreneurship education, Innovation ecosystems.*

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## 1. Introduction. Context and Importance of the Study

Studying entrepreneurial mindsets and attitudes in universities is essential for understanding how higher education institutions can contribute to the development of entrepreneurial skills, the promotion of innovation, and the revitalization of economic initiative. Universities play a crucial role in shaping future entrepreneurs by providing an environment conducive to developing the skills necessary for starting and managing businesses - skills that are vital for success and for adapting quickly to the changes brought about by a globalized and dynamic economy (Gibb, 2002; Kirby, 2004).

Entrepreneurial education in universities is not limited to teaching theory; it also involves cultivating an entrepreneurial mindset that encourages students to identify and seize opportunities, and we can include here fostering a culture of innovation, risk-taking, and tolerance for failure (Fayolle & Gailly, 2008). Many universities, either self-declared or recognized by academics and practitioners as "entrepreneurial," integrate these principles into their curricula and extracurricular activities to create a robust entrepreneurial ecosystem (Etzkowitz, 2003).

Gaining insight into entrepreneurial mindsets and attitudes within universities is crucial for identifying the barriers and challenges students encounter when pursuing entrepreneurial initiatives (Nabi et al., 2017). By understanding these factors, universities can develop strategies and policies that more effectively support students on their entrepreneurial journey.

## 2. Theoretical Backgrounds

### 2.1 Relevant Concepts, Theories, and Models Regarding Entrepreneurial Mindset and Attitude

The entrepreneurial mindset in entrepreneurial universities refers to the values, attitudes, and behaviors that promote initiative, innovation, and risk-taking among students and academic staff. It implies openness to change, acceptance of failure, and a focus on identifying and exploiting opportunities. Entrepreneurial universities foster this mindset through educational programs, extracurricular activities, and collaborations with the business environment (Gibb, 2002; Kirby, 2004).

On the other perspective, entrepreneurial attitudes refer to predispositions and positive reactions toward entrepreneurial activities, such as the desire to initiate and develop new projects, the ability to cope with uncertainty, and the motivation to create economic and social value. In universities, these attitudes are cultivated through interactive teaching methods, case studies, business plan competitions, and mentoring (Fayolle & Gailly, 2008; Nabi et al., 2017). Thus, entrepreneurial universities are higher education institutions that integrate entrepreneurship into their educational and research missions, creating an ecosystem that supports entrepreneurial initiatives by students and staff, collaborating with industry, and

providing resources for business development (Etzkowitz, 2003; Clark, 1998; Badulescu & Badulescu, 2013, Tripa et al., 2025).

The development of entrepreneurial mindsets and attitudes in the academic environment is explained through various theories and models. For example, *Human Capital Theory* (Becker, 1964) suggests that education and training contribute to the development of skills necessary for entrepreneurial activities, and in entrepreneurial universities, this theory is reflected in the emphasis placed on curricula and educational programs that build students' entrepreneurial competencies. Considering a different approach, *The Entrepreneurial Intention Model* (Ajzen, 1991), based on the *Theory of Planned Behavior*, suggests that the intention to become an entrepreneur is influenced by attitudes, subjective norms, and perceived behavioral control. Entrepreneurial universities can influence these components by creating a learning environment that supports entrepreneurial initiative.

Another relevant theory is *Experiential Learning Theory* (Kolb, 1984), which emphasizes the importance of learning through direct experience and reflection. This model is applied through interactive teaching methods such as case studies and business plan competitions, allowing students to learn through practice and develop entrepreneurial skills in real-world contexts. Etzkowitz's theories (2003), associated with the *Entrepreneurial University Model*, describe universities that create ecosystems supporting entrepreneurial initiatives by students and staff, collaborating with industry, and promoting a culture of innovation and creativity.

Finally, the *Entrepreneurial Self-Efficacy Theory* (Bandura, 1997) focuses on individuals' confidence in their ability to initiate and develop entrepreneurial projects. Entrepreneurial universities can enhance students' self-efficacy by providing opportunities for success and mentorship, thereby increasing their confidence in their entrepreneurial abilities.

### 2.2 Key Factors Influencing Entrepreneurial Education in Higher Education Institutions

The literature highlights a wide range of internal and external factors, which will be addressed in the following paragraphs.

Organizational culture is an essential driver of the development of entrepreneurial mindsets and attitudes in entrepreneurial universities, to promote innovation and risk-taking, encourage interdisciplinary collaboration, and provide resources for the development of innovative ideas tend to have students and staff who are more open to entrepreneurship, thus creating an environment conducive to the development of entrepreneurial mindsets (Gibb, 2002; Kirby, 2004). Educational policies also play a crucial role: university programs that include entrepreneurship courses, interactive teaching methods, experiential learning opportunities, and relevant extracurricular activities contribute to shaping entrepreneurial attitudes (Fayolle & Gailly, 2008; Nabi et al., 2017; Badulescu et al., 2019). The external environment is another main driver - collaborations with

industry, access to business networks, and support from incubators and science parks are essential for entrepreneurial development. Universities with strong partnerships with the private sector manage to create a robust entrepreneurial ecosystem (Etzkowitz, 2003; Clark, 1998), offering students networking opportunities and support for business development (Bengtsson & Lind, 2004; Halbfas, 2017; Park, 2014).

Finally, legal and economic factors can significantly influence entrepreneurial mindsets and attitudes, both positively and negatively, depending on the regulatory environment, available incentives, and institutional support mechanisms. For example, a report by the European Parliament mentions several countries (Germany, France, Romania, Slovenia) where students may lose specific benefits associated with their student status when registering their own business (European Parliament, 2015). In other words, removing legal barriers and offering economic incentives can encourage more students to pursue the entrepreneurial path.

## 3. Entrepreneurial Education at the EU and Member State Level. Policies and Programs Supporting Entrepreneurial Education

The educational and research policies of the European Union emphasize the importance of entrepreneurial education as a driver of economic growth and job creation. The Europe 2020 Strategy and initiatives such as the Entrepreneurship 2020 Action Plan promote entrepreneurial education at all levels of education, including universities, to foster entrepreneurial spirit and improve young people's entrepreneurial skills (European Commission, 2013).

At the level of member states, initiatives are diverse and adapted to national and sub-regional resources and objectives. In Germany, programs such as EXIST and Gründerstipendium provide funding and mentorship for academic start-ups, thus supporting individual or coordinated efforts by numerous universities (EXIST, 2024; Halbfas, 2017). Sweden promotes entrepreneurship through national innovation programs and collaborations between universities and science parks (Bengtsson & Lind, 2004; Park, 2014), while Spain has initiatives such as Emprendia and the Programa de Creación de Empresas, which support university entrepreneurship, with notable efforts from the Autonomous University of Barcelona and the Universidad Politécnica de Madrid (Universidad Politécnica de Madrid, 2024; OVTT, 2024).

In Italy, the Italia Start-Up Visa program facilitates access for international entrepreneurs and supports entrepreneurial initiatives within universities (Ministero dello Sviluppo Economico, 2022). Austria has initiatives such as AplusB, which support business incubators and academic start-ups (AplusB, 2024), while Slovenia, Slovakia, and Croatia promote entrepreneurship through national innovation programs and support for start-ups, including funding schemes and university-backed business incubators.

Outside the EU, initiatives such as Enterprise Education (Enterprise Educators UK, 2024) and Start-Up Loans (The Start-Up Loans Company, 2024) in

the United Kingdom offer funding and support for students who wish to develop their own businesses.

These national programs and initiatives significantly contribute to the development of entrepreneurial ecosystems within universities and to the promotion of entrepreneurial mindsets and attitudes among students. They complement university-led initiatives that integrate entrepreneurship across all study programs and collaborate closely with industry to provide students with practical experiences and networking opportunities (Gibb, 2002; Kirby, 2004).

## 4. Methodology and Study Framework

HEInnovate is a collaborative initiative launched by the European Commission and the OECD to support higher education institutions in developing their entrepreneurial and innovative capacities, aiming to create a dynamic and innovation-oriented educational ecosystem (HEI Innovate, 2024). The platform provides self-assessment tools, resources, and case studies to help universities improve their educational strategies and practices. University reports, available in the resources section, document and share best practices, challenges, and the impact of entrepreneurial education initiatives, offering valuable recommendations for improving educational programs and supporting entrepreneurial development in academia - thus contributing to the creation of a more dynamic and innovative educational ecosystem (OECD, 2022; OECD/EU, 2018).

In our analysis, we collected HEInnovate reports from 14 renowned universities across 13 European countries (see Table 1). These reports examine their entrepreneurial education initiatives, with the main objective of developing entrepreneurial competencies and promoting innovative mindsets among students.

**List of universities whose reports were analyzed, categorized by legal status, number of students, and location**

**Table 1**

| No. | University Name | Legal Status | Number of Students | Geographical Area |
|---|---|---|---|---|
| 1 | Instituto Politécnico do Porto, Portugal | Public | 21,211 | Southern Europe |
| 2 | Erasmus University Rotterdam, Netherlands | Public | 39,150 | North-Western Europe |
| 3 | Lund University, Sweden | Public | 47,000 | North-Western Europe |
| 4 | Leuphana University of Lüneburg, Germany | Public | 9,600 | North-Western Europe |
| 5 | Autonomous University of Barcelona, Spain | Public | 43,175 | Southern Europe |
| 6 | Johannes Kepler University, Austria | Public | 24,000 | Central Europe |

| No. | University Name | Legal Status | Number of Students | Geographical Area |
|---|---|---|---|---|
| 7 | Milan Polytechnic University, Italy | Public | 47,959 | Southern Europe |
| 8 | Technical University of Kosice, Slovakia | Public | 10,643 | Central Europe |
| 9 | University of Ljubljana, Faculty of Economics, Slovenia | Public | 40,000 | Central Europe |
| 10 | Josip Juraj Strossmayer University in Osijek, Croatia | Public | 15,000 | Central Europe |
| 11 | University of Cambridge, United Kingdom | Public collegiate research university | 24,450 | North-Western Europe |
| 12 | University of Huddersfield, United Kingdom | Public | 20,000 | North-Western Europe |
| 13 | University of Southern Denmark, Denmark | Self-governed institution, publicly funded | 27,000 | North-Western Europe |
| 14 | Kozminski University, Warsaw, Poland | Private | 5,300 | Central Europe |

*Source*: Compilation by the authors based on reports (HEI Innovate, 2024), university websites, and specialized organizations

The methodology used for analyzing the university reports was qualitative, based on content analysis. This involved the following steps:

1. Data Collection: Reports from 14 European universities were gathered, each detailing their entrepreneurial education initiatives.
2. Data Coding: Each report was read and coded to identify relevant themes and sub-themes - specifically, text segments referring to curriculum, extracurricular activities, collaborations, and partnerships.
3. Thematic Analysis: The identified themes were analyzed to uncover patterns and relationships between the different approaches taken by the universities, identifying best practices and common challenges.
4. Comparison and Contrast: The methods and practices of each university were compared to highlight similarities and differences. This included evaluating how each university integrates entrepreneurship into the curriculum, the types of extracurricular activities offered, and the nature of collaborations with industry.
5. Data Verification: To ensure the validity of the results, the data from the reports were cross-checked with information from other sources, such as case studies and relevant academic articles (Fayolle & Gailly, 2008; Kolb, 1984; OECD, 2022; OECD/EU, 2018).

By using this qualitative methodology, the study was able to extract detailed and nuanced insights into entrepreneurial education practices across European universities, providing a solid foundation for future recommendations and improvements.

## 5. Results and Discussion

### 5.1 Analysis of Methodologies and Implementation Practices

The analysis of methodologies and implementation practices of entrepreneurial education in the studied universities focused on three main dimensions: curriculum and educational programs, extracurricular activities, and collaborations and partnerships.

Thus, the methodologies and implementation practices in entrepreneurial education play a crucial role in shaping students' entrepreneurial mindsets and attitudes. These methodologies include a variety of pedagogical approaches and teaching strategies designed to stimulate entrepreneurial thinking and encourage initiative and innovation. Interactive teaching methods such as case studies, group projects, and business simulations allow students to learn through direct experience, thereby developing practical skills and a deep understanding of entrepreneurial processes (Kolb, 1984; Fayolle & Gailly, 2008).

For example, at Johannes Kepler University Linz, business planning courses based on patents and innovation labs engage students in real projects, collaborating with entrepreneurs and external consultants to solve practical entrepreneurial management problems. Entrepreneurial universities integrate entrepreneurship courses across all study programs, giving students the opportunity to learn about entrepreneurship from an interdisciplinary perspective. Another example - Leuphana University of Lüneburg offers a modular curriculum covering strategic competencies, startup management, economics, communication, and financial planning (Halbfas, 2017). According to the National Content Standards for Entrepreneurship Education (NCSEE), these courses are often based on national content standards for entrepreneurship education (NCSEE, 2014).

Extracurricular activities such as business plan competitions, business incubators, and mentoring programs provide students with opportunities to apply theoretical knowledge in real-world contexts, thereby reinforcing entrepreneurial attitudes. Erasmus University Rotterdam, through its "Get Started" and "Student Founders Programme," offers practical support and mentoring for business idea development, positively influencing students' entrepreneurial mindsets (Erasmus Universiteit Rotterdam, 2014).

Real collaborations and partnerships with industry and other institutions are essential for creating a robust entrepreneurial ecosystem, providing students with access to external resources - as seen at the University of Porto, or Milan Polytechnic University (Etzkowitz, 2003; Clark, 1998). Lund University

collaborates with IDEON Science Park to offer students networking opportunities and support for business development (Park, 2014; Bengtsson & Lind, 2004).

Evaluating the impact of entrepreneurial education programs is essential for their continuous improvement. Universities use various assessment methods, including student feedback, performance analysis in business plan competitions, and graduate career tracking (Nabi et al., 2017), continuously refining their methodologies and implementation practices in entrepreneurial education to influence students' mindsets and attitudes and to foster an entrepreneurial culture within universities.

### 5.2 Developing the Entrepreneurial Mindset, Teaching Methods, and Extracurricular Activities in European Universities: A Comparative Analysis

In Table 2 below, we have summarized the main findings from the comparative analysis of the reports from the 14 European universities, based on three main criteria: the development of the entrepreneurial mindset, teaching methods, and extracurricular activities. This table highlights the diversity of approaches in promoting entrepreneurship, offering a useful perspective for students, educators, and researchers interested in entrepreneurial education and best practices in the field.

**Comparative Analysis of Universities Based on Three Criteria of Entrepreneurial Education within the Theme "Entrepreneurial Mindsets and Attitudes"**

**Table 2**

| No. | University | Entrepreneurial Mindset Development | Teaching Methods | Extracurricular Activities |
|---|---|---|---|---|
| 1 | Instituto Politécnico do Porto (IPP), Portugal | IPP emphasizes entrepreneurial mindset through curriculum and extracurricular integration | Case studies, team projects, mentoring | Business idea competitions and mentoring programs |
| 2 | Erasmus University Rotterdam (EUR), Netherlands | EUR uses interdisciplinary approach to develop entrepreneurial skills | Interactive lectures, case studies, practical projects | Incubation programs and business plan competitions |
| 3 | Lund University (LU), Sweden | LU integrates entrepreneurial education across all study programs | Project-based learning, case studies, mentoring | Business idea competitions and mentoring programs |
| 4 | Leuphana University of Lüneburg (LUL), Germany | LUL uses a holistic approach to develop students' entrepreneurial skills | Interactive lectures, case studies, team projects | Incubation programs and business plan competitions |

| No. | University | Entrepreneurial Mindset Development | Teaching Methods | Extracurricular Activities |
|---|---|---|---|---|
| 5 | Autonomous University of Barcelona (UAB), Spain | UAB emphasizes entrepreneurial education through curriculum and extracurricular activities | Case studies, team projects, mentoring | Business idea competitions and mentoring programs |
| 6 | Johannes Kepler University (JKU), Austria | JKU uses interdisciplinary approach to develop students' entrepreneurial skills | Interactive lectures, case studies, practical projects | Incubation programs and business plan competitions |
| 7 | Milan Polytechnic University (MPU), Italy | MPU emphasizes entrepreneurial education across all study programs | Project-based learning, case studies, mentoring | Business idea competitions and mentoring programs |
| 8 | Technical University of Kosice (TUKE), Slovakia | TUKE emphasizes extracurricular activities for developing entrepreneurial skills. Programs include AZU and start-up weekends | Practical methods such as forming student teams and developing business ideas | Wide range of extracurricular activities, including training programs and business idea competitions |
| 9 | University of Ljubljana, Faculty of Economics (FELU), Slovenia | FELU uses Design Thinking approach to stimulate creativity and innovation among students | Customer interviews, team idea generation, rapid prototyping | Start-up weekends and business idea competitions |
| 10 | Josip Juraj Strossmayer University in Osijek (SUO), Croatia | SUO emphasizes entrepreneurial mindset through extracurricular activities and collaborations with external partners | Methods include role-playing, case studies, experiential learning | Community work, 'Entrepreneurs Without Borders' initiative, and business plan competitions |
| 11 | University of Cambridge (UC), United Kingdom | UC uses practical approach in entrepreneurial education, focusing on experiential learning and collaboration | Traditional lectures, case studies, technology simulations, pitching sessions | Programs include Enterprise Tuesday, Enterprisers, and Ignite |
| 12 | University of Huddersfield (UoH), United Kingdom | UoH distinguishes between 'entrepreneurial education' and 'education for entrepreneurial spirit' | Lectures, tutorials, case studies, practical projects | Business skills workshops, startup support, and SimVenture business simulation game |

| No. | University | Entrepreneurial Mindset Development | Teaching Methods | Extracurricular Activities |
|---|---|---|---|---|
| 13 | University of Southern Denmark (SDU), Denmark | SDU aims to equip students with entrepreneurial skills: creating, exploring, and exploiting opportunities | Kolb's experiential learning model and Design Thinking method | Science Innovator, Venture Cup, VIIS (Viden, Innovation, SME), etc. |
| 14 | Kozminski University (KU), Poland | KU promotes ambitious entrepreneurship, encouraging students to focus on growth-potential businesses | Practical workshops, modern teaching materials, textbooks and online resources | 'Warsaw, the Capital of Ambitious Business' projects involving students from various disciplines |

*Source*: HEI Innovate, 2024

### 5.3 Analysis of Differences, Similarities, and Limitations in University Approaches to the Theme "Entrepreneurial Mindsets and Attitudes"

Regarding similarities, we found that all the analyzed universities emphasize the development of an entrepreneurial mindset through extracurricular activities and the integration of entrepreneurship into the academic curriculum. Interactive and practical teaching methods - such as case studies, role-playing, and team projects - are commonly used. Additionally, all universities offer extracurricular activities to stimulate entrepreneurship, including business idea competitions and mentoring programs.

The differences in university approaches are somewhat more complex. For example, in terms of attitudes toward entrepreneurship, the University of Southern Denmark and Lund University view entrepreneurship as a means of creating value and innovation, not merely as a startup activity. Meanwhile, the Technical University of Kosice and Josip Juraj Strossmayer University emphasize regional collaboration and the integration of external partners.

In terms of curriculum integration, the University of Huddersfield and the University of Southern Denmark have embedded entrepreneurial education across all faculties and study programs, whereas the University of Cambridge and Lund University focus more on extracurricular activities and specific entrepreneurship programs.

Regarding resources and support, the University of Southern Denmark has developed a dedicated entrepreneurship center (IDEA), while the University of Huddersfield has an entrepreneurship team that supports both students and alumni.

We also identified geographical patterns: universities in North-Western Europe (UK, Sweden, Denmark, Germany) emphasize interdisciplinary

collaboration and involvement in real-world projects; those in Central Europe (Austria, Poland, Croatia, Slovenia) focus on developing practical skills and industry collaboration; and those in Southern Europe (Portugal, Spain, Italy) promote an interdisciplinary and collaborative approach, with an emphasis on co-creation and sustainability.

As for weaknesses and limitations, universities in North-Western Europe report coordination issues, a tendency to focus mainly on business and economics students, limited financial and human resources, difficulties in measuring impact, and a decline in self-reported startup rates. Conversely, universities in Central Europe mention severe financial and human resource constraints for prototyping, as well as legal barriers that influence students' mindsets and behaviors. Southern European universities highlight the lack of a clear internal rationale for entrepreneurship activities and a misalignment between activities and desired outcomes. Therefore, early and accurate identification of these weaknesses can help in taking measures to mitigate negative effects, prevent resource waste, and maintain student and academic staff interest in entrepreneurship.

## 6. Conclusions

The findings of this study highlight the importance of entrepreneurial education in universities for developing the skills and mindsets needed in a globalized and dynamic economy. The comparative analysis of reports from 14 European universities revealed that integrating entrepreneurship into the curriculum, offering extracurricular activities, and fostering collaborations with industry are essential for shaping future entrepreneurs.

The universities studied demonstrated diverse approaches to promoting entrepreneurship, ranging from interactive and practical teaching methods - such as case studies and team projects - to business idea competitions and mentoring programs. These activities not only stimulate entrepreneurial thinking but also reinforce positive attitudes toward entrepreneurial initiatives.

However, the study also identified significant challenges, such as limitations in financial and human resources, legal barriers, and difficulties in measuring the impact of entrepreneurial education. These constraints require innovative and collaborative solutions. For example, international partnerships and collaborations with industry can provide additional resources and essential networking opportunities for students. To improve the effectiveness of entrepreneurial education programs, universities should continue to develop interactive teaching methods, support extracurricular activities, strengthen collaborations with external partners, and advocate for the removal of legal barriers and the provision of economic incentives to encourage more students to pursue the entrepreneurial path.

The limitations of this study include reliance on university-provided reports, which may vary in detail and objectivity, and the use of a qualitative analysis method, which may introduce subjectivity in data interpretation.

Additionally, the lack of a longitudinal evaluation limits the understanding of the long-term impact of entrepreneurial education initiatives.

Future research directions could include a longitudinal assessment of the impact of entrepreneurial education on graduates' careers, exploration of how international collaborations can be expanded to support entrepreneurial initiatives, and investigation of innovative methods to overcome the identified financial and legal constraints.

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