Studies on Entrepreneurship, Structural Change and Industrial Dynamics

Jacinto Jardim *Editor*

Entrepreneurial Education in a Global and Digital World

Volume II: Method and Practices

Springer

Studies on Entrepreneurship, Structural Change and Industrial Dynamics

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Jacinto Jardim
Editor

Entrepreneurial Education in a Global and Digital World

Volume II: Method and Practices

Springer

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ISSN 2511-2023 ISSN 2511-2031 (electronic)
Studies on Entrepreneurship, Structural Change and Industrial Dynamics
ISBN 978-3-032-17007-1 ISBN 978-3-032-17008-8 (eBook)
https://doi.org/10.1007/978-3-032-17008-8

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Preface

From Method to Impact: The Transformative Practice of Entrepreneurial Education

The book **Entrepreneurial Education in a Global and Digital World** is based on the conviction that entrepreneurial education should increasingly be the subject of research, guided by scientific rigour and methodology. In this context, methods are a privileged area of research, enabling us to identify the most effective educational paths and strategies for developing entrepreneurial skills and specific value creation capabilities.

The goal to be prioritised in entrepreneurial education is to contribute to the creation of innovative ecosystems. In the long term, these ecosystems play a transformative role, supporting the regeneration of economies and societies in different ways.

By focusing on methodical research and evidence-based practices, entrepreneurial education can drive more effective and meaningful social and economic change. In today's world, characterised by technological acceleration and the interdependence of knowledge, cultures, and markets, teaching and learning in an entrepreneurial way means using methods that prepare citizens to create value and respond creatively to uncertainty.

This volume *From Method to Impact* focuses precisely on this point: how pedagogical methods translate into human, institutional, and social impact. While volume I presented the philosophical, psychological, and pedagogical foundations of entrepreneurial education, this second volume delves deeper into how educational methods become transformative practices. The centrality of the "method" is not merely technical, but ethical and cultural: it involves designing learning experiences that link knowledge and action, theory and practice, thought and transformation. Thus, the volume investigates the path from teaching to empowerment, from instruction to agency, and from learning to value creation.

In recent times, several educational models have emerged that reflect this transformation in entrepreneurial education. The focus is no longer solely on the transmission of knowledge, but now includes, in an integrated manner, the encouragement

of initiative, critical thinking and problem-solving skills. In addition, these models value curiosity, encourage exploration, and promote group learning. The skills acquired have become the foundation for facing concrete challenges, generating profound changes, such as changing mindsets, developing new skills, and creating real value.

This trend confirms that experiential and reflective approaches make the most significant contributions to educational transformation. In learning environments based on projects, real-world challenges, and peer collaboration, students take on an active role, learning to think and act like entrepreneurs. Systematic reflection, experimentation, and dialogue become central tools for development. Whether in European innovation contexts, African inclusion programmes, or Scandinavian universities focused on sustainability, it is observed that direct contact with reality awakens a sense of purpose and reinforces personal and collective empowerment.

Overall, the most effective practices share four mechanisms of transformation that underpin contemporary entrepreneurial education. The first is the change in entrepreneurial identity, achieved through pedagogies that use stimuli, reflection and symbolic experiences that gradually alter the habitus of learners. The second is the development of practical skills, such as problem-solving, critical thinking, and the creation of tangible value. The third is the bridge between theory and practice, which consists of teaching the "entrepreneurial method" as a way of thinking and acting—not just as disciplinary content. Moreover, the fourth is empowerment, which reflects the student's transition from a recipient of knowledge to an author of their own learning and an agent of change in their context.

This transformation matrix provides the backdrop for organising the Volume. Part I: **Developing Educational Programmes** brings together contributions that demonstrate how different institutions and educational communities design entrepreneurial training programmes at various levels of education, from pre-school to university, including vocational and social education. Examples are presented of entrepreneurial educational communities, innovative universities, female and social entrepreneurship programmes, and financial literacy initiatives, all with the common denominator of linking curricular innovation to institutional transformation.

Part II: **Using Differentiated Educational Strategies** delves into the field of differentiated and inclusive methodologies, including problem-based learning, formative and competency-based assessment, network teaching, OnLIFE and distance methodologies, collaborative leadership, citizenship and human rights education, ethical human resource management, storytelling, and language teaching from an entrepreneurial perspective. Together, these approaches construct a pedagogical mosaic that mirrors the complexity of today's world, demonstrating that educational innovation is both an act of intellectual creation and a social and ethical practice.

This volume, therefore, proposes a journey from method to impact. It is based on the conviction that educational methods are effective when they foster autonomy, creativity and responsibility, and when they can translate learning into transformative action. More than just transmitting content, entrepreneurial education mobilises people and institutions for change, becoming an instrument of social and cultural regeneration.

In a global and digital world, where information is abundant but the ability to think critically is scarce, entrepreneurial education offers its most decisive contribution: teaching how to think creatively and transform knowledge into the ability to create something of value. This book invites educators, researchers, and decision-makers to follow this path—from method to impact—and to recognise that every educational practice contains the potential to change the way we think, learn, and live together.

Lisboa, Portugal Jacinto Jardim

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Developing Educational Programs

Entrepreneurial Educational Communities: Integrating Creativity and Innovation Skills into the Curriculum and Educational Project

Cleber Lopes, Jacinto Jardim, and Raquel Pasternak Glitz Kowalski

Abstract This chapter investigates the integration of creativity and innovation skills into the school curriculum from the perspective of entrepreneurial education, advocating for their incorporation into the educational project as a strategy to develop proactive and resilient students. This theoretical-reflective research analyses practices, active methodologies, and international curricular experiences that demonstrate how entrepreneurial education can be designed in a cross-cutting and contextualized way, from basic to higher education. Based on a literature review, the study identifies strategies that foster skills such as leadership, critical thinking, autonomy, and problem-solving skills for the twenty-first century. The use of emerging technologies, innovation labs, interdisciplinary projects, and partnerships between schools, communities, and the productive sector are identified as facilitators in building innovative educational ecosystems. The results show that entrepreneurial education, by integrating transversal skills into daily school life, contributes not only to academic success but also to social and economic development. The study concludes that flexible curricula and the development of "teacherpreneurs"

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J. Jardim (ed.), *Entrepreneurial Education in a Global and Digital World*, Studies on Entrepreneurship, Structural Change and Industrial Dynamics,
https://doi.org/10.1007/978-3-032-17008-8_1

are crucial to addressing contemporary challenges and preparing citizens who can innovate and collaborate in diverse contexts.

Keywords Entrepreneurial education · Creativity · Innovation · Curriculum · Twenty-first-century skills

1 Introduction

Understanding the evolution and significance of entrepreneurial education through an analysis of historical practices and theoretical influences that have shaped this field highlights its transformation into a powerful tool for the twenty-first century. The exploration of entrepreneurship's historical roots spans from early commercial activities and technological innovations to its consolidation as an academic discipline. This chapter presents how entrepreneurial education has become essential in preparing students for a globalized, dynamic, and challenging world, emphasizing the need to develop crucial skills such as creativity, adaptability, and resilience, which are indispensable in the contemporary context. These skills are analyzed as not only relevant for entrepreneurs and adults but for all citizens, equipping them to navigate successfully within a globalized and digitalized social and economic environment.

This chapter also explores the development of the entrepreneurial curriculum. It discusses how an effective curriculum should include components that foster innovative thinking and entrepreneurial skills, such as creativity, initiative, risk-taking, autonomy, self-confidence, leadership, and teamwork.

The importance of a flexible and adaptable curriculum is examined, allowing students to explore their own ideas and projects, encouraging self-directed learning and experimentation.

The most effective methodologies and teaching strategies for promoting an entrepreneurial curriculum are also discussed. These include active teaching methodologies such as educational games, group dynamics, case studies, and project-based learning (PBL). These approaches not only develop technical skills but also promote transversal skills such as collaboration, communication, and leadership.

Documented benefits of entrepreneurial education are presented, highlighting studies that show how this form of education can increase self-confidence, enhance problem-solving skills, and foster innovation. Ultimately, this chapter explores how entrepreneurial education fosters social and economic inclusion, providing individuals of all ages with the opportunity to develop their skills and achieve success.

This chapter invites readers on an academic journey through the history, practices, and curriculum of entrepreneurial education, exploring how it can transform lives and make a meaningful contribution to a more innovative and adaptable future.

1.1 Contextualization of Entrepreneurial Education

The history of entrepreneurial education can be traced back to the origins of commercial activity, when the exchange of goods and services required innovative thinking and negotiation skills. In the twentieth century, with the industrial revolution and technological advancement, entrepreneurship began to be formally recognized and studied as an academic discipline.

Entrepreneurial education is regarded as a critical tool to prepare individuals for a dynamic and challenging labor market. It fosters not only the ability to start new businesses but also to innovate within existing organizations, significantly contributing to economic and social transformation (Jardim & Sousa, 2023). Developing these skills from an early age is essential, as emphasized by Summer (2019), who highlights the need to train primary school teachers to foster entrepreneurial abilities in children. Additionally, Stenholm et al. (2021) emphasize that entrepreneurial education can occur both intentionally and unintentionally, exposing students to entrepreneurial skills through diverse teaching methods.

Globalization and digitalization have intensified the demand for entrepreneurial education. In the twenty-first century, entrepreneurial skills are viewed as essential not only for businesspeople but for all citizens, enabling them to navigate successfully in a constantly evolving economic and social landscape. Entrepreneurial education is no longer limited to business creation; it encompasses a set of skills including critical thinking, problem-solving, creativity, and adaptability (Jardim et al., 2021).

The importance of entrepreneurial education is supported by extensive literature pointing to the benefits of developing an entrepreneurial mindset from childhood. Research indicates that entrepreneurial education can boost self-confidence, enhance problem-solving skills, and foster innovation. It can also contribute to social and economic inclusion by providing opportunities for individuals from all backgrounds to develop their talents and achieve success (Jardim, 2021).

2 Entrepreneurships in the School Environment

2.1 Definition of an Entrepreneurial Curriculum

An entrepreneurial curriculum should include essential components that promote innovative thinking and entrepreneurial skills. According to Jardim (2021), entrepreneurship education involves fostering skills such as creativity, initiative, risk-taking, autonomy, self-confidence, leadership, and teamwork. These elements are fundamental for empowering students to transform ideas into concrete actions.

Dolabela and Filion (2013) reinforce this view by asserting that one of the most powerful means of fostering entrepreneurship in society is through educational

programs that embed an entrepreneurial mindset across all levels of the education system, especially from the earliest years of schooling, when foundational attitudes such as autonomy, responsibility, and self-confidence are developed.

In addition to promoting skills such as creativity and leadership, entrepreneurial education can also foster a democratic culture when connected to the common good. Tiemensma and Rasmussen (2019) demonstrate this by proposing an entrepreneurial education model grounded in ethical and participatory attitudes, capable of strengthening active and sustainable citizenship.

An entrepreneurial curriculum must be flexible and responsive to students' needs and interests. This means enabling students to explore their own ideas and projects, encouraging self-directed learning and experimentation. Curriculum personalization can be achieved through problem-based learning (PBL), which engages students in real-world challenges that require creative and innovative solutions (Jardim & Sousa, 2023).

Stenholm et al. (2021) add that skills such as creativity, experiential learning, and financial literacy can be cultivated even within subjects not explicitly focused on entrepreneurship. For instance, mathematics classes can include activities involving financial planning and risk analysis, while science classes can address technological innovation and applied research. In this way, entrepreneurship can be integrated transversally throughout the school curriculum.

To make this integration effective, educators must be trained to teach in an interdisciplinary manner. According to Arruti and Paños-Castro (2023), the development of "teacherpreneurs"—teachers who act as entrepreneurs within the educational context—is an effective strategy to promote an entrepreneurial curriculum. These educators are trained to use innovative methodologies and collaborate with colleagues across disciplines, creating more dynamic and integrated learning environments.

Ferreira and Malheiros (2021) argue that schools play a central role in shaping entrepreneurial individuals by promoting a culture of participation, autonomy, and social responsibility from the earliest years of basic education.

de Faria and Lopes (2022) emphasize that building this teaching profile requires continuous professional development programs that align pedagogical intent with familiarity with frameworks such as EntreComp and institutional support, so that entrepreneurial skills are meaningfully translated into classroom practices.

Simón and Vivaldo (2022) highlight the importance of developing transversal skills through entrepreneurial education, particularly in vulnerable contexts. Their study demonstrates that entrepreneurial education can help children in disadvantaged situations develop essential skills, including communication, leadership, and innovation. Through well-designed educational interventions, such as child entrepreneurship workshops, it is possible to foster environments in which children learn to apply these skills in multiple areas of their lives.

2.2 Methodologies and Teaching Strategies

The use of active teaching methodologies is essential for the effective implementation of an entrepreneurial curriculum. Jardim (2021) suggests using educational games, group dynamics, and case studies as strategies to engage students and develop practical skills. Board games and video games that simulate business management can be used to teach business concepts in a playful and interactive manner. Additionally, studying the biographies of successful entrepreneurs can inspire students and demonstrate that entrepreneurship is a viable and rewarding career path.

As Dolabela and Filion (2013) emphasize, methodologies that stem from students' dreams and realities, valuing experience and affectivity, become powerful tools for meaningful and lasting learning—capable of connecting knowing with doing and feeling. This perspective breaks away from the traditional transmissive model and places the student at the center of the process, recognizing them as the author of their own educational journey.

Project-based learning (PBL) is a pedagogical approach that has shown great promise in entrepreneurial education. This methodology engages students in real projects that require the application of interdisciplinary knowledge and the solving of complex problems. According to Jardim and Sousa (2023), PBL not only develops technical skills but also promotes transversal skills such as collaboration, communication, and leadership.

Another relevant methodology is problem-based learning (PBL), which encourages students to identify real-world problems and develop innovative solutions. This approach fosters critical thinking and problem-solving skills, which are essential for entrepreneurship (Jardim, 2021). Moreover, the use of emerging technologies, such as augmented reality and digital platforms, can enrich the educational process, making it more interactive and engaging.

2.3 Teaching Resources and Tools

To implement an entrepreneurial curriculum, various actions are necessary. Partnerships with companies can provide students with practical experiences and mentoring, helping to connect theoretical learning with real-world practice. These partnerships may include company visits, internships, guest lectures by industry professionals, and collaboration on real-life projects (Jardim, 2021).

Digital technologies enable the creation of immersive learning environments where students can simulate business situations and develop their skills in a safe and controlled context.

Tools such as business simulation software, crowdfunding platforms, and professional social networks are examples of resources that can be integrated into the curriculum (Jardim & Sousa, 2023).

Summer (2019) emphasizes the importance of including financial education as part of entrepreneurial training, using practical situations and appropriate teaching materials to develop these skills starting in primary education. Financial literacy is fundamental for preparing students to manage their own resources responsibly and to understand the implications of their financial decisions in both personal and professional contexts.

According to Arruti and Paños-Castro (2023), participatory methodologies based on real-life situations are essential to promoting active learning and student autonomy. Methodologies such as project-based learning (PBL), problem-based learning, and gamified activities can be highly effective in engaging students and promoting the acquisition of entrepreneurial skills. These pedagogical approaches encourage collaboration, problem-solving, and practical application of knowledge, preparing students for real-world challenges.

The use of resources such as makerspaces and innovation labs is another key element in the development of an entrepreneurial curriculum. These spaces offer students the opportunity to work on hands-on projects, develop prototypes, and test their ideas in a collaborative environment. Jardim et al. (2021) suggest that these creative learning environments are essential for stimulating innovation and critical thinking.

Entrepreneurial education at the primary level can be a powerful tool for developing transversal skills. In a study conducted at a multigrade primary school in Mexico, Simón and Vivaldo (2022) demonstrate how an educational intervention focused on entrepreneurship helped children from vulnerable contexts acquire both practical and theoretical skills, as well as essential skills such as leadership, innovation, and teamwork.

Incorporating entrepreneurial education into the school curriculum demands more than the occasional inclusion of content or isolated activities—it requires the intentional restructuring of pedagogical practices, teacher training, and the institution's overall educational project.

Based on the evidence discussed, it is possible to affirm that an entrepreneurial curriculum must be lived in a transversal way and connected to students' realities, fostering autonomy, critical thinking, and transformative action. Inspired by entrepreneurial pedagogy, such educational practices place the student at the center of the process, recognizing them as an agent capable of imagining futures and acting upon them, as highlighted by Dolabela and Filion (2013). This critical and emancipatory approach redefines the school space as an environment for personal, social, and community development.

3 Curricular Experiences for Entrepreneurial Education

3.1 International Mapping of Successful Initiatives

Several countries have implemented effective entrepreneurial education strategies with positive results. For example, Finland and Denmark are recognized for integrating entrepreneurial skills into their school curricula, promoting innovation from basic education through higher education (Jardim, 2021). Finland, known for its innovative educational system, incorporates entrepreneurial education at all levels, with a particular focus on interdisciplinary projects and phenomenon-based learning.

In Denmark, entrepreneurial education is an integral part of the school curriculum, with programs that encourage students to develop their own business ideas and social projects. These programs are supported by strong mentorship systems and partnerships with the private sector, providing students with practical insights into the business world.

Summer's (2019) study on the implementation of entrepreneurial education in mathematics for future primary teachers in Austria shows how these practices can be adapted and applied across different educational contexts. The Austrian approach includes teacher training in entrepreneurial methodologies as well as the development of specific teaching materials to integrate entrepreneurship into mathematics instruction. This study highlights the importance of preparing teachers to act as facilitators of entrepreneurial learning, equipping them with the necessary skills to guide students through problem-based projects.

Stenholm et al. (2021) indicate that even subjects not explicitly focused on entrepreneurship can contribute to the development of entrepreneurial skills through innovative teaching methods and diverse learning contexts. For instance, in Sweden, schools adopt an interdisciplinary approach to teaching entrepreneurship, where teachers collaborate to create projects that combine multiple subjects, enabling students to develop a comprehensive set of skills.

In the United Kingdom, the "Young Enterprise" program offers high school students the opportunity to create and manage their own companies over the course of a school year. Students receive mentorship from business professionals and participate in regional and national competitions, developing skills such as leadership, teamwork, and public speaking.

Jardim et al. (2021) add that Entrepreneurship Education Programs (EEPs) have proven effective in promoting entrepreneurial skills at various educational levels, emphasizing the importance of fostering these skills from primary and secondary education. Studies show that students who participate in EEPs demonstrate greater initiative, self-confidence, and the ability to solve complex problems.

Simón and Vivaldo (2022) reveal that entrepreneurial education in primary education can be a powerful tool for developing transversal skills.

3.2 Case Studies

Case studies illustrate how entrepreneurial curricula can be successfully implemented in various school contexts. A notable example is the Entrepreneurship and Citizenship Education Program (PEEC) in Portugal, which offers a structured and systematic approach to developing entrepreneurial skills across different age groups (Jardim, 2021). PEEC includes practical activities such as the creation of mini-companies and participation in entrepreneurship fairs, providing students with meaningful, hands-on experiences.

Research by Jardim and Sousa (2023) highlights the importance of problem-based learning programs in developing entrepreneurial skills among higher education students. At institutions such as the University of Porto, engineering and business courses include startup projects in which students must identify problems, develop innovative solutions, and pitch their projects to real investors.

Another example is the Junior Enterprise program in Brazil, which enables university students to create and manage their own companies while still enrolled. These student-run companies, supervised by professors and industry professionals, provide real services to real clients, offering valuable practical experience.

Stenholm et al. (2021) emphasize that hands-on and project-based teaching methods can significantly increase the effectiveness of entrepreneurial education. For example, at Aalto University in Finland, the entrepreneurship course includes design thinking modules in which students work in multidisciplinary teams to develop prototypes and test their ideas in the market.

Arruti and Paños-Castro (2023) point out that participatory methodologies and collaborative learning environments are essential to developing entrepreneurial skills. The case study of the Sagrada Familia Foundation in Spain demonstrates how teachers' self-perception of their entrepreneurial skills can be improved through ongoing professional development programs and the implementation of innovative pedagogical practices.

Another case is the TIIM Program (Technology Innovation and Impact in Management) at the University of Aveiro, Portugal, where students work on real-life projects in partnership with local companies. This program is designed to integrate theory and practice, allowing students to develop innovative solutions to real business problems while learning about management and entrepreneurship.

The educational intervention described by Simón and Vivaldo (2022) at a multigrade primary school in Mexico also serves as a relevant case study. Through a children's entrepreneurship workshop, the authors show how children from vulnerable backgrounds can develop both transversal skills and practical entrepreneurial skills. The methodology included playful and hands-on activities, such as planning material purchases, organizing production, and selling products, offering a complete entrepreneurial cycle experience.

These case studies demonstrate that entrepreneurial education can be effectively incorporated across different educational levels, from primary to higher

education, through practical, collaborative, and contextualized approaches. Regardless of the country or age group, initiatives that integrate theory with practice, such as simulated companies, interdisciplinary projects, and partnerships with the market, have proven effective in developing entrepreneurial skills. These examples reinforce the importance of innovative curricula and active methodologies that stimulate students' autonomy, creativity, and critical thinking, preparing them not only for the labor market but also for active citizenship in a constantly evolving society.

4 Integrations of Technology and Collaboration in Entrepreneurial Communities

4.1 Emerging Technologies

The integration of emerging technologies into the entrepreneurial curriculum can transform the learning experience. Tools such as augmented reality and digital platforms enable the creation of immersive and collaborative learning environments, facilitating the development of both practical and theoretical skills (Jardim, 2021). For example, virtual reality can be used to simulate complex business scenarios, allowing students to practice decision-making in a safe environment.

In the context of teacher education, Summer (2019) highlights the use of educational videos and role-playing to teach financial and economic concepts in an engaging and practical way. These resources can create realistic scenarios in which students must apply their knowledge to solve financial problems, such as designing business plans or analyzing investment strategies.

Stenholm et al. (2021) emphasize that the use of innovative methodologies can unintentionally foster the development of entrepreneurial skills, even in courses not explicitly focused on entrepreneurship. For instance, business simulation software used in economics and management courses can help students better understand market challenges and opportunities.

Jardim et al. (2021) suggest that educational games, group dynamics, and biographies of entrepreneurs are effective strategies for promoting an entrepreneurial culture. Board games and video games that simulate business management can be used to teach business concepts in a playful and interactive way. In addition, studying the life stories of successful entrepreneurs can inspire students and demonstrate that entrepreneurship is a viable and rewarding career path.

The use of technologies such as artificial intelligence (AI) and machine learning can also be explored to personalize the learning experience and provide real-time feedback. For example, adaptive learning platforms can adjust content and pacing based on each student's progress and needs, ensuring a more effective and individualized learning experience (Arruti & Paños-Castro, 2023).

4.2 Learning Communities and Innovation Networks

Online learning communities and innovation networks play a crucial role in supporting entrepreneurial development. These platforms enable knowledge and experience sharing, promoting a culture of collaboration and innovation among students, educators, and industry professionals (Jardim, 2021). For example, professional networks like LinkedIn can be used to connect students with mentors and potential business partners.

Interdisciplinary collaboration and the use of methodologies such as project-based learning are fundamental for creating innovative and dynamic learning environments (Summer, 2019). For instance, interdisciplinary projects involving students from engineering, design, and business programs can result in innovative solutions to real-world problems, such as the development of new products or services.

Stenholm et al. (2021) also point out that collaboration across disciplines can lead to the unintentional teaching of entrepreneurial skills, expanding the reach of entrepreneurial education. Programs like the Global Entrepreneurship Week (GEW) encourage schools and universities to organize events that promote entrepreneurship by bringing together students from various fields for workshops, competitions, and lectures.

According to Jardim et al. (2021), effective entrepreneurship education programs integrate practical activities such as business simulations and company visits to connect theory and practice. For example, visits to business incubators and technology parks can provide students with insights into how startups operate and the challenges they face.

Arruti and Paños-Castro (2023) emphasize that the use of creative and collaborative learning environments is essential for developing entrepreneurial skills. Spaces such as makerspaces and innovation labs allow students to experiment and develop their ideas in an environment that fosters collaboration and exploration.

The creation of communities of practice, where educators and industry professionals can share knowledge and best practices, is another effective strategy to promote entrepreneurship education. These communities can be organized around specific themes, such as technological innovation or sustainability, providing a space for experience exchange and continuous learning (Jardim, 2021).

5 Final Considerations

5.1 Challenges and Opportunities

The creation and sustainability of entrepreneurial educational communities present several challenges, such as the need for adequate resources and resistance to change in traditional teaching methods. However, the opportunities are vast, including the

potential transformation of educational practices and the promotion of a culture of innovation (Jardim, 2021).

Ongoing teacher development and curriculum adaptation to include entrepreneurial skills are essential steps to overcome these challenges (Summer, 2019). Teachers must be trained to adopt new teaching methodologies that foster critical thinking and creativity. Professional development programs focused on entrepreneurial pedagogies can help educators feel more confident and capable of teaching these skills.

Dolabela and Filion (2013) emphasize that the cultural shift required by entrepreneurial pedagogy must begin with schools and educators, who need to reinvent themselves as learning facilitators and agents of social transformation, rather than mere transmitters of content. This implies breaking with outdated paradigms and constructing new meanings for the teaching profession in the twenty-first century.

Tiemensma and Rasmussen (2019) caution that, for entrepreneurial education to be truly effective and aligned with civic formation, authentic learning situations must be created where students can develop democratic attitudes, collaborative skills, and skills oriented toward the common good. This means moving beyond a purely instrumental view of entrepreneurship to embrace an ethical and transformative educational approach.

Stenholm et al. (2021) suggest that the implementation of innovative pedagogical practices can facilitate the integration of entrepreneurial skills, even if unintentionally. This includes the use of digital technologies, active teaching methodologies, and the cultivation of a school culture grounded in innovation.

According to Jardim et al. (2021), successful entrepreneurial education programs must consider students' personal dispositions and their socioeconomic and cultural contexts. This means tailoring programs to students' needs and interests, considering their life experiences and future aspirations.

Arruti and Paños-Castro (2023) argue that preparing "teacherpreneurs" is fundamental to leading significant change within schools. These innovative educators can create learning environments that foster entrepreneurial thinking and innovation, helping to transform traditional education.

The implementation of educational policies that support entrepreneurship education is another challenge to be addressed. Governments and educational institutions must work together to develop and enforce policies that promote innovation and entrepreneurship in schools. This includes providing adequate funding, creating incentives for educational innovation, and supporting ongoing teacher development (Jardim, 2021).

5.2 Practical Recommendations

To foster educational ecosystems that promote innovation and entrepreneurship, educators and administrators need to adopt interdisciplinary and collaborative approaches. The implementation of mentorship programs, partnerships with

businesses, and the utilization of emerging technologies are effective strategies for achieving these goals (Jardim, 2021).

Summer (2019) suggests that teacher education programs include specific modules on financial and entrepreneurial education, preparing educators to teach these skills from the early years of schooling. These modules may incorporate practical activities, such as developing business plans and analyzing case studies, which help teachers build a deep understanding of entrepreneurial concepts.

Stenholm et al. (2021) emphasize the importance of integrating entrepreneurial skills across various subject areas by leveraging innovative teaching methods. For instance, integrating business simulations and case studies into economics and management courses can help students better understand real-world challenges and enhance their entrepreneurial skills.

Jardim et al. (2021) recommend the use of continuous evaluation and program adjustments to ensure effectiveness and relevance. This includes regularly collecting feedback from students and teachers, as well as adapting programs to align with students' needs and interests.

The study by Arruti and Paños-Castro (2023) reinforces the need for ongoing teacher training to promote effective entrepreneurial education. Professional development programs focused on entrepreneurial methodologies can help teachers stay current with best practices and innovations in the field of education.

Another recommendation is the creation of online platforms that facilitate collaboration between schools, universities, and companies. These platforms can serve as innovation hubs where students and educators share ideas, resources, and experiences, fostering a culture of entrepreneurship and innovation (Jardim & Sousa, 2023).

5.3 Future Impact

Entrepreneurship education holds the potential to significantly impact future generations by preparing them to face the challenges of an ever-changing world. By fostering skills such as creativity, adaptability, and resilience, entrepreneurial education contributes to the development of proactive and innovative citizens (Jardim, 2021).

Educational practices that encourage critical reflection and the practical application of knowledge are fundamental to laying a solid foundation for entrepreneurship from early childhood (Summer, 2019). This includes promoting a growth mindset in which students are encouraged to view challenges as learning opportunities and to recover from failures with resilience.

The work of Stenholm et al. (2021) highlights that integrating entrepreneurial skills through innovative pedagogical practices can have a lasting impact on students' development. Entrepreneurial education programs that use active methodologies—such as project-based learning and design thinking—can help students develop an entrepreneurial mindset that prepares them for professional success.

According to Jardim et al. (2021), promoting a global entrepreneurial culture requires a continuous and integrated effort across all levels of education. This involves collaboration among schools, universities, businesses, and governments to build learning ecosystems that support innovation and entrepreneurship.

Arruti and Paños-Castro (2023) emphasize the importance of a holistic approach that includes teacher training and the development of programs that integrate entrepreneurship education in a transversal and interdisciplinary manner. This approach can help create learning environments that foster creativity, innovation, and collaboration, equipping students to meet the challenges of the twenty-first century.

Entrepreneurship education can also contribute to building more inclusive and sustainable societies. By preparing individuals to identify and pursue opportunities, solve complex problems, and collaborate effectively, entrepreneurship education can support the development of resilient economies and strong communities (Jardim, 2021).

Integrating entrepreneurship education into school curricula enables a transformation in teaching, fostering innovation and adaptability, qualities that are essential in a rapidly evolving world. An effective entrepreneurial curriculum goes beyond business creation, focusing on the development of creativity, resilience, and critical thinking. Through active methodologies, emerging technologies, and strategic partnerships, schools can create dynamic learning environments that equip students to face future challenges confidently.

When structured effectively, entrepreneurship education not only influences individual development but also contributes to socioeconomic progress. By embedding these skills transversally and interdisciplinarity from early education, we prepare a proactive and innovative generation capable of making significant contributions to their communities and the world. Although the full integration of entrepreneurship education into curricula is an ongoing process, its long-term benefits promise a more adaptable, inclusive, and prosperous future.

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The Design of Entrepreneurship Study Programs in Entrepreneurial Universities

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Abstract This chapter discusses the elements necessary for developing entrepreneurship programs in higher education institutions. The analysis is supported by an empirical case of a Brazilian university, the Pontifical Catholic University of Rio Grande do Sul (PUCRS), a community institution with around 13,000 face-to-face students and over 80,000 online students. The elements presented serve as a guide for proposing recommendations for other institutions to develop their entrepreneurial education strategies, from the comprehensive vision of entrepreneur training (intrapreneurship) to business generation (entrepreneurship). The recommendations focus on two main areas: the institutional strategic context for offering entrepreneurial education and the didactic-pedagogical conditions for organizing educational programs related to entrepreneurship. The recommendations can be adapted to the reality of each institution in a gradual process of developing entrepreneurial education programs.

Keywords Entrepreneurial university · Entrepreneurial education · Entrepreneurship study programs · Higher education · Entrepreneurial competencies

1 Introduction

Entrepreneurship has emerged as an alternative to innovation and economic and social development worldwide in recent years. In response to this growing importance, universities have played a key role in promoting and supporting entrepreneurship, not only through the development of entrepreneurial education but also by cultivating an entrepreneurial culture on their campuses. In this context, the Design

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J. Jardim (ed.), *Entrepreneurial Education in a Global and Digital World*, Studies on Entrepreneurship, Structural Change and Industrial Dynamics,
https://doi.org/10.1007/978-3-032-17008-8_2

of Entrepreneurship Study Programs in Entrepreneurial Universities becomes essential in training future leaders as agents of social transformation.

Starting from the premise that one of the formal bases of Entrepreneurial Universities is precisely Entrepreneurial Education (Guerrero & Urbano, 2012), this chapter aims to explore the theme "The Design of Entrepreneurship Study Programs in Entrepreneurial Universities." The text addresses issues related to the design of these educational programs at the Pontifical Catholic University of Rio Grande do Sul, located in southern Brazil, highlighting adopted strategies, guiding principles, and applicable methodologies. This case study (Yin, 2016) addresses the following research question: "What elements are necessary for developing entrepreneurship programs in an entrepreneurial higher education institution?"

The theoretical discussion supported by an empirical case allows the proposition of recommendations that serve as a basis for higher education institutions to follow paths toward becoming entrepreneurial universities in all their dimensions. In addition to aspects related to the generation of new businesses, intrapreneurship is encouraged in existing organizations, understanding the development of entrepreneurial skills as a means for students to declare their missions in an education based on purpose—purpose learning (Stanford University, 2025)—in a comprehensive entrepreneurial education.

2 The Design of Entrepreneurship Study Programs

Entrepreneurship study programs at universities require careful analysis of their dimensions, making it a vital component of a strategic nature to be considered in curricular design. This involves both theoretical knowledge and the development of practical skills through real-world projects and experiential learning opportunities, i.e., not just talking "about" entrepreneurship but rather "through" it (Pittaway & Edwards, 2012). When designing educational programs, instead of focusing on the appropriation of content and curricula in their forms and dynamics, they must be designed so that students develop entrepreneurial skills. "From this perspective, the Entrepreneurial University works on the concept of a 'living curriculum' in addition to the course vision integrated with relevant social demands and deliveries, i.e., 'through' teaching entrepreneurship 'for' a society" (IDEAR, 2018b).

According to Hägg and Gabrielsson (2020), the main theoretical influences of Entrepreneurial Education, in turn, in its pedagogy and programs, come from the theory of experiential learning, which is based on Kolb (1984, as cited in Hägg & Gabrielsson, 2020), in constructivist educational philosophy (Piaget, 2000, as cited in Hägg & Gabrielsson, 2020), experience-based pedagogy (Dewey, 1946, as cited in Hägg & Gabrielsson, 2020), and problem-based learning (Barrows & Tamblyn, 1980, as cited in Hägg & Gabrielsson, 2020).

The 1980s stand out as an era in which the professor was prevalent. This era reflected a conventional approach to teaching and learning, where educators were charged with shaping the educational environment. Pedagogical developments were

driven by debates about curricular content and teaching techniques applied in the classroom (Hägg & Gabrielsson, 2020). Currently, education is understood as transcending the classroom and being connected with society.

One of the main challenges in building educational programs for entrepreneurs is the need to improve the integration of "action" and "practical experience" with a pedagogical strategy with a significant social impact. Otherwise, there is a risk of adopting an instrumental and technical approach. In this sense, such programs must be aligned with the strategic plans of universities and the aspirations of society. In this context, it is essential to highlight that entrepreneurial skills must be seen as a continuous development process, as highlighted by Lackéus (2015), and not as isolated or evasive objectives. The next generation of jobs will not be based on professions but on the ability to solve complex problems and overcome challenges, many of which do not exist yet. Self-knowledge, initiative, versatility, and the ability to transform creative ideas into concrete actions are among the skills that determine workability and the exercise of citizenship today (IDEAR, 2018b).

The Design of Entrepreneurship Study Programs in Entrepreneurial Universities is, then, a transversal institutional strategy connected to the economic and social context in which it is inserted and in which it affects, providing opportunities for the formation of purposeful citizens capable of transforming ideas into projects real, supporting the concept of the European Commission on Entrepreneurship Education, of "transforming creative ideas" into "entrepreneurial actions." Such programs must be intentionally designed to ensure the development of fundamental contemporary skills for all students and support personal development, active citizenship, social inclusion, and workability. These aspects are relevant throughout the lifelong learning process, in all learning subjects, and all forms of education and training (European Commission, 2014, p. 9).

Given the importance of entrepreneurial education in developing skills for students at a personal, social, and professional level and its contribution to increasing workability, there is a growing interest in and an increasingly greater integration of this topic into higher education curricula from an intercourse perspective relevant for students in all areas of knowledge (Rodriguez, 2023).

3 Methodology

This study adopted a qualitative perspective centered on the Case Study of the Pontifical Catholic University of Rio Grande do Sul (PUCRS) and considered the Entrepreneurial Paths.

PUCRS is a community educational institution that values the integration between teaching and research, promoting an education centered on life and citizenship. With 75 years of history, it actively contributes to the development of society. Currently, it has around 13,000 undergraduate students in 61 courses, 80,000 in 167 specialization courses, and 2000 in 22 master's and doctoral programs. It has 2500 professors, administrative technicians, and more than 179,000 graduates. It stands

out among the best universities in Latin America and the Caribbean. It is the best private institution in the Southern Region of Brazil according to the QS Latin America & The Caribbean University Rankings 2024. In addition, it obtained a grade of 5 in the General Course Index (IGC) of the MEC and ranks second among the best private universities in Brazil in the Times Higher Education World University Rankings 2024.

By investigating recent and ongoing phenomena, this study presents an exploratory-descriptive approach to understand an object of analysis and describe the processes involved (Myers, 2019). Its methodological strategy is predominantly deductive (Yin, 2016).

The data collection procedure relied on sources such as documents and records of institutional activities and bibliographies related to the areas of study. In the qualitative research approach, incorporating different sources of evidence allows the convergence of lines of investigation, confirming findings and generating more robust, precise, and valid results (Yin, 2016).

4 Entrepreneurial Universities and Entrepreneurial Education at PUCRS

Universities play an increasingly central and challenging role in contemporary economies, in which the generation of value through the production of innovative and competitive processes and products has become more valued (and feasible) than the search for a consolidated and stable job. Thus, in addition to providing an entrepreneurial curriculum—characterized by the development of students to create businesses and, especially, an entrepreneurial attitude in all areas—universities need to have their management and governance processes based on these same assumptions (Schulte, 2007), cooperating with governments, companies, and other organizations in pursuit of a mission that includes generating social impact.

Based on a literature review of entrepreneurial university models, Guerrero and Urbano (2012) state that these organizations are composed of formal factors (entrepreneurial organizational and governance structure, support measures for entrepreneurship, entrepreneurship education), informal factors (university community's attitudes toward entrepreneurship, entrepreneurial teaching methodologies, role models and reward system); resources (human capital, financial, physical, and commercial), and capabilities (status and prestige, networks and alliances, localization). These articulated factors generate results in teaching, research, and entrepreneurial activities. This chapter focuses on the formal aspect of Entrepreneurial Education and the informal factor of Entrepreneurial Teaching Methodologies to characterize the path followed by PUCRS to encompass comprehensive entrepreneurial education, but without disregarding the importance of other aspects.

Among the various challenges of Entrepreneurial Education is contemplating the different dimensions of this topic. Shao et al. (2024) systematized four axes:

entrepreneurial learning (knowledge and thinking), entrepreneurial practice (entrepreneurial activities to enhance cognition and abilities), Startup Service (support for entrepreneurial business development), and entrepreneurial climate (environment, culture, and ecology).

Concerning the latter, Institutional Development Plans (IDPs) play a crucial role in universities, as they provide a strategic framework to guide academic, administrative, and extension activities. At PUCRS, the IDP reflects a vision of academic excellence and a commitment to innovation, entrepreneurship, and social responsibility.

The entrepreneurial climate is, therefore, related to organizational culture. This, in turn, comprises artifacts, exposed values, and basic assumptions (Schein, 2003). The IDP is one of these explicit elements of the exposed values. In addition, some artifacts are materialized in PUCRS's own entrepreneurship and innovation ecosystem, comprising a Technology Park with more than 20 years of existence that houses more than 100 companies, among other institutional actors. This park also has a preincubation, incubation, and guidance program for business development and catalysis, therefore related to the Startup Service axis.

However, until 2016, these elements were exclusively related to one of the dimensions of entrepreneurship: business creation. Transforming explicit values and basic assumptions was required to incorporate a comprehensive vision of entrepreneurial education, which also included the development of skills related to identifying opportunities, prospecting resources, and putting ideas into action (Bacigalupo et al., 2016). Thus, IDEAR–PUCRS's Interdisciplinary Laboratory of Entrepreneurship and Innovation was born based on the strategic challenge of raising awareness of entrepreneurial education as a competence to transform society and generate impact across the board and all curricula.

The Laboratory at PUCRS encourages traditionally non-entrepreneurial students, professionals, and the community to develop entrepreneurial competencies and problem-solving thinking through active teaching methods in lectures, courses, advising services, and events. The strategies employed are based on (1) embedding entrepreneurship and innovation across the University's curriculum, (2) promoting faculty development programs on active learning methodologies and entrepreneurial competencies, and (3) leading open innovation activities to strengthen ties between the university community and companies.

In this sense, IDEAR, through its strategic planning, developed five phases of implementation of Entrepreneurial Education at PUCRS.

The first phase (2016–2017), Transversal Development of Entrepreneurial Education, consisted of encouraging entrepreneurial thinking and creating companies to develop Entrepreneurial Skills (EntreComp) among students of all undergraduate courses at the University. The proposal was based on Bacigalupo et al. (2016)'s 15 entrepreneurial skills, divided into the axes of ideas and opportunities, resources, and action. This approach sought to bring entrepreneurship closer to each School of the institution (School of Business; School of Communication, Arts, and Design; School of Humanities; School of Law; School of Health and Life Sciences, and School of Medicine). Furthermore, it began a transversal awareness among

professors on entrepreneurial skills as essential for training professionals with an impact on society. The creation of IDEAR came from a survey of more than 1000 students from the university itself, which outlined the students' entrepreneurial profiles and mapped their vision on the topic of entrepreneurship. The results showed a view of entrepreneurship limited to business creation and specific courses, such as administration and engineering. The embryo of the concept was tested through a free workshop called "Projeto Desafios" in the second half of 2015, which had more than 200 registrations in just 1 week from more than 30 different courses. The workshop tested an intercourse approach to entrepreneurship with playful pedagogical resources that fostered the development of entrepreneurial skills. The result of this process supported the premises of what would become IDEAR.

Between 2018 and 2019, the second phase, Consolidate the Commitment to Entrepreneurial Education, began at PUCRS. During this period, all areas of knowledge were engaged in promoting entrepreneurship, expanding beyond the creation of companies and startups. The university made this commitment institutionally, disseminating and systematizing our entrepreneurship and innovation ecosystem at PUCRS, such as Track Startup (an initiative that integrates Schools, IDEAR, and TECNOPUC–PUCRS's Science and Technological Park in courses and events that encourage business development). In addition, pedagogical materials were created, such as the book "Sou uma Ideia a Empreender" (IDEAR, 2018a), addressing contexts about entrepreneurship and the PUCRS ecosystem in a playful format of activities to reflect and get to know oneself as an entrepreneur. At this time, the Entrepreneurship Paths at PUCRS have been systematized, which will be detailed later. These efforts were recognized with awards, such as the "SEBRAE Entrepreneurial Education Award," promoted by the Brazilian Micro and Small Business Support Service (SEBRAE), and recognition as a finalist in the Reimagine Education Awards, promoted by the British company Quacquarelli Symonds (QS), which recognizes innovative approaches that improve the learning and employability process.

The third phase, "Expansion of Teaching and Student Development in a Transversal Way," occurred from 2020 to 2021 during the COVID-19 pandemic. In this period, methodologies were developed to promote entrepreneurship and innovation, including the "Entrepreneurial Educator" program (online program for teaching development); resources such as the book "Sou uma Ideia a Empreender—Guia do Professor" (IDEAR, 2018b); the game ColabAção—designed to mobilize entrepreneurial skills, such as learning from experience, awakening creativity, dealing with uncertainty, mobilizing people and resources through the search for solutions for the 17 UN Sustainable Development Goals—United Nations (Kampff et al., 2022); and the Online Narrative "Purpose Discovery Trail" (Libermann et al., 2023). These initiatives reflected the commitment of PUCRS and IDEAR to adapting education to contemporary demands, which are described below.

In the fourth phase, from 2022 to 2024, IDEAR intensified its commitment to Promoting Entrepreneurship as a Factor for Social Transformation and Individual Purpose. Through initiatives such as extension courses in all undergraduate courses and expanding student participation in the Purpose Discovery Trail, the university

sought to engage students in practices beyond the traditional academic environment. This was accomplished by implementing the Service Learning methodology detailed in the following subchapter. Thus, PUCRS, through IDEAR, reaffirms its commitment to preparing students to face the challenges of the job market with an entrepreneurial and socially responsible approach.

IDEAR enters the fifth phase of its Entrepreneurial Education strategy, covering 2024 to 2025. This new stage focuses on Entrepreneurial Education Aimed at Solving Global Challenges and Training Impact Leaders. This challenge is addressed in three main spheres, described below.

First, we seek to strengthen the Entrepreneurial University through strategic review and integrative approaches between the innovation ecosystem, with students and the academic community as the audience. This strategy takes place through three axes of action: increasing new pedagogical strategies, repositioning, and qualification of projects provided by IDEAR. The University is expected to strengthen its entrepreneurship and innovation skills through this synergy.

Next, the importance of Training Entrepreneurs and Leaders capable of facing contemporary social, environmental, and cultural challenges through impact businesses is highlighted. This training will be possible through teaching qualifications, with diversified training offers, such as the Socio-environmental Impact Business Booklet (IDEAR, 2024), carried out by PUCRS and Team IDEAR, and sponsored by the Institute of Corporate Citizenship (ICE). Added to this is the qualification of programs such as "Entrepreneurial Educator" and the offering of workshops on pedagogical resources on an ongoing basis. This Entrepreneurial Education strategy is supported by recent studies, as highlighted by Pathak (2019), highlighting future trends in entrepreneurial education and the need to revisit curricula to keep up with contemporary demands.

Finally, the Transversalization of Learning for Purpose emerges as a fundamental pillar of entrepreneurial education at PUCRS. This implies updating institutional documents, ensuring their review and qualification so that the purpose is integrated comprehensively and meaningfully in all aspects of the curriculum, preparing students to act with conscience and responsibility in their future professional and personal trajectories.

Objectives and Key Results (OKRs) were established for each of the three highlighted elements to ensure the effectiveness of the abovementioned strategies. OKRs provide a clear structure to define specific and measurable goals aligned with strengthening the entrepreneurial university, training entrepreneurs and impact leaders, and mainstreaming learning for purpose.

For PUCRS, entrepreneurial education means learning how to generate benefits for society. Through IDEAR–PUCRS's Interdisciplinary Laboratory of Entrepreneurship and Innovation, founded in 2016, students, professors, and the community are sensitized to the topic of entrepreneurship. IDEAR believes in entrepreneurship and an entrepreneurial attitude as factors of social transformation. Encouraging an interdisciplinary entrepreneurial attitude and innovation with a positive impact on society is achieved through the union of all areas of knowledge in favor of training people who propose solutions that can change the world.

Thus, in the context of entrepreneurial learning and entrepreneurial practice, the learning principle stands out, recognizing the significant influence of students' motivations and emotions on their academic success. According to Educational Research and Innovation (Organization for Economic Co-operation and Development [OECD], 2017), students demonstrate greater engagement and effectiveness in learning when motivated by relevant content and experience positive emotions during the teaching and learning process. At PUCRS, this approach is evidenced through projects and extension initiatives within society, in which students, technicians, and professors collaborate to identify and resolve challenges faced by the community, resulting in positive social impacts and benefiting more than half a million citizens every year.

With this strategic and contextual dimension described, we detail the tactical and operational actions that enabled the creation of entrepreneurial programs at the University.

5 Analysis and Description of Results: Exploring the Possibilities of an Entrepreneurship and Innovation Ecosystem

The PUCRS's Entrepreneurship and Innovation Ecosystem has diverse agents, including courses, laboratories, and a technology park with various spaces to encourage entrepreneurship and innovation. Each responds to specific needs in the entrepreneurial journey of students, alums, and the community in general. The Entrepreneurship Paths were developed at PUCRS with this trajectory in mind.

This initiative's main agents are IDEAR–PUCRS's Interdisciplinary Laboratory of Entrepreneurship and Innovation; PUCRS 360°, which are spaces within the University that seek to reflect and promote changes in curricula and teaching and learning methodologies in search of comprehensive student training; the 7 Schools of PUCRS (School of Business; School of Communication, Arts, and Design; School of Humanities; School of Law; School of Health and Life Sciences and School of Medicine) and TECNOPUC–PUCRS's Science and Technological Park. Figure 1 represents the agents' division and each one's commitment toward PUCRS students.

Students can follow the "Discovery of purpose" trail, which shows the activities that individuals can participate in to understand how to make a difference, know their skills and purpose, be a purposeful professional, and generate an impact on society and/or the "Development of my business" trail, which encourages students to get their ideas off paper, create a startup, and consolidate a business. PUCRS Schools are connected to this Innovation Ecosystem.

In this Ecosystem, within the scope of Undergraduate Studies, there is IDEAR, a laboratory already described. IDEAR's transversal methodologies, included in the pedagogical proposals of undergraduate courses, are Entrepreneurial Educator,

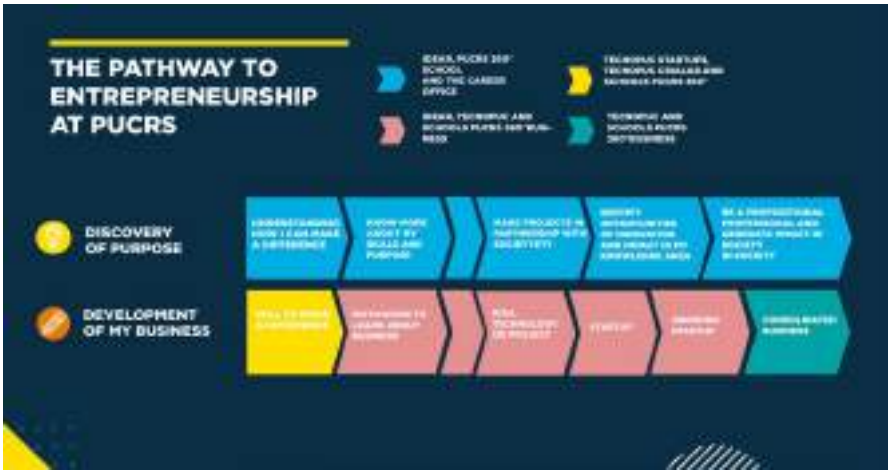

Fig. 1 Entrepreneurship paths at PUCRS. Note: Adapted from "Sou uma ideia a empreender," by IDEAR (2018a)

Purpose Discovery Trail, Innovation Didactic Games, and Service Learning. Next, we will briefly account for them.

5.1 Entrepreneurial Educator

Entrepreneurial Educator is a teaching training course that aims to develop and raise awareness among professors about the causes of innovation and entrepreneurship. The strategic vision is to promote professor engagement as agents of transformation and as sensitizers for creating agents among peers and students. A transformation agent or transformative person is "anyone who takes action to address a problem, activates others, and works towards solutions for the good of all" (Duplechain & Lax, 2019, p. 9).

Entrepreneurial Educator was launched in 2021, focusing on improving the practices and experiences that professors can provide in the classroom, making learning more active and plural. The training path encompasses entrepreneurial skills with innovative pedagogical practices. It includes learning about collaboration in networks, connection, community, and society based on engaging pedagogical experiences to develop impactful projects.

Since its launch, around 200 professors from all PUCRS Schools have participated in IDEAR's practices and experiences. They have access to resources such as games, textbooks, and workshops that IDEAR teaches about the game Colab Ação. These initiatives allow professors to apply entrepreneurship to their disciplines, encouraging their students to develop entrepreneurial skills, creativity, and innovation.

5.2 Purpose Discovery Trail

Career purpose is increasingly essential for Brazilian professionals. A survey of 1191 Brazilians showed that 74% of professionals refused or left a job on purpose (Talenses Group, 2020). IDEAR, inspired by the ideas of Sinek (2018), promotes activities so that students and the community can generally reflect on personal and professional purposes. The practices developed value students' motivation and emotional connection with what they study and do, contributing to their academic and personal growth.

Among the various IDEAR initiatives, the "Purpose Discovery Trail" course, which is optional and free, stands out with an estimated dedication of 20 h to complete the proposed route. Developed with the support of the Brazilian Micro and Small Business Support Service (SEBRAE) and launched in 2021, the course aims to provide students with moments of self-knowledge, reflection, and discovery of purpose. Playfully, each participant creates a character (avatar) and participates in an adventure. The participant is invited to complete reflection and self-knowledge exercises by going through each trail stage. The goal is to find themselves, working as a team to unravel the mystery and discover their purpose.

In a gamified experience, participants are invited to follow a "visual novel," a genre of electronic game that combines interactive narrative with visual elements. The journey consists of five steps in addition to the trial evaluation. During the journey, the student can go through each step whenever and wherever they want, with up to 2 months to complete the path. In addition to the asynchronous content, the training has forums for chats about the experience, integration between participants, and clarification of doubts.

The steps are divided into: "I can make a difference," "What is my purpose," "The beginning of a partnership," "Identifying opportunities," and "Together we will propose the solution." Figure 2 illustrates the organization of the steps.

Since its launch, the Purpose Discovery Trail has involved more than 900 participants from more than 40 undergraduate courses, demonstrating its scope and relevance to the academic community.

Fig. 2 Steps of the purpose discovery trail course. Note: from "Trilha da descoberta do propósito: uma jornada inovadora para conectar carreira e propósito," by Libermann et al. (2023)

5.3 Innovation Teaching Games

IDEAR provides diverse educational resources (games, books, and teaching materials) to improve entrepreneurial skills, such as creativity, leadership, and problem-solving. Among them, games explore topics from sustainability to finance. These resources are designed for use by professors in the classroom and supported by the IDEAR team for guidance before implementation. With a collection of 31 learning instruments, 20 of which are games, IDEAR offers the possibility of application both in the classroom and in its own space, with specialized support available by prior appointment.

These games work on different skills, competencies, and themes. Most of our collection seeks to develop creativity and disruptive thinking in approaching and solving the most varied problems (sustainability, group management, projection and supply of goods and services, etc.), with space for the participants to choose the themes they will include in the activity. Furthermore, some games develop the capacity for argumentation, decision-making leadership, and delegation of functions.

ColabAção stands out here. It was created by IDEAR, in partnership with the Etérea studio and PUCRS Online Graduation Coordination, which mobilizes entrepreneurial skills based on the Sustainable Development Goals (SDGs) of the United Nations (UN) and in challenges of the Pandemic. ColabAção is a pedagogical initiative designed to operate as an active, scalable methodology, easy to reproduce by professors and adapted to any area of knowledge synchronously or remotely with physical and digital versions.

The card game is structured into five categories—Objectives, Team, Partnerships, Time, and Resources—representing the core elements of social intervention design processes. Teams play the game (cooperative mode), and each group is provoked to design solutions for the world (Fig. 3).

From 2020 to 2022, the game was part of a survey involving 892 participants from 12 undergraduate courses, emphasizing health and social work courses. The survey aimed to answer the question: How can playful strategies contribute to developing entrepreneurial skills in higher education students, especially those promoting social change? The results indicated that the implemented strategies significantly improved student engagement and co-responsibility in their learning processes and promoted more significant interaction and experimentation (Kampff et al., 2022).

Fig. 3 ColabAção. Note: by IDEAR and PUCRS Online Undergraduate Coordination

ColabAção won first place in the state stage of the 2nd SEBRAE Entrepreneurial Education Award. Furthermore, it was selected as one of the ten finalists on the national stage of the Award, organized by the Brazilian Micro and Small Business Support Service (SEBRAE). These achievements highlight the effectiveness and positive impact of this game on the entrepreneurial education scenario in Brazil.

5.4 Service Learning

Universities are traditionally characterized by their commitment to teaching and research as their first and second missions. Increasingly in recent decades, social responsibility has emerged as a "third mission," becoming increasingly central in higher education. PUCRS has adopted Service Learning as one of the policies for inserting students in extension activities directly linked to solving community challenges around the university based on the proposition of real challenges and situations, as well as providing the development of socio-emotional skills in students.

Service Learning, as a pedagogy in higher education, aims to support professors and researchers in building experiences from their disciplines, applying knowledge in the real world, and promoting students' social responsibility. "Service Learning, or learning in service, is an educational approach to the curricular component that allows students to engage in real-life experiences in the community, the city, the company, organizations, and different contexts" (IDEAR, 2022).

This learning can be connected to global learning, a process in which diverse people collaboratively analyze and address complex problems that transcend borders, promoting collective well-being through coordinated actions (Ambagts, 2024). Such actions can involve complex problems, encouraging students to delve deeper into practical experiments, knowledge, and debates. In the meantime, global learning is paramount in university contexts, and this approach can be directly linked to the student's experience in the Service Learning Program.

In general terms, via the Service Learning methodology, students solve real problems for partner organizations (public, private, and nonprofit), stimulating their social, behavioral, and technical skills and preparing them for a world of work where entrepreneurship, innovation, and social responsibility are crucial. Since its implementation in 2016, Service Learning has more than 280 partners and 300 classes. In total, 11,000 students have already participated in the methodology, resulting in a total of 1600 projects guided by 90 professors.

In addition, IDEAR published the book Service Learning (IDEAR, 2022) and two open exhibitions of projects developed by undergraduate students.

In terms of impact, more than 50,000 services have been provided since the creation of IDEAR, highlighting the impact of practices that prioritize students' motivation and emotional connection. This number reflects a commitment to student's academic and personal growth and highlights the importance of providing meaning and fulfillment in their personal and professional lives.

In this sense, it is clear that Entrepreneurial Universities must be attentive to students' engagement and emotions to develop personal strategies that promote successful learning (OECD, 2017). Understanding and responding to students' motivations and emotions is not just courtesy but an effective strategy for improving educational outcomes. As this principle is applied widely, educational discourse and pedagogical practices are hoped to reflect a deeper understanding of the role of engagement and emotions through experimentation in the learning process.

6 The Design of Entrepreneurship Study Programs in Entrepreneurial Universities

6.1 Formal Institutional Aspects|Entrepreneurial Education

An entrepreneurial university encompasses diverse processes, from management to entrepreneurial education processes (Schulte, 2007). Implementing Entrepreneurial Education requires aligning the development of programs with the university's governance and institutional strategy, ensuring that they contribute to the institution's general objectives. Alignment processes involve the construction of shared understandings on the topic, establishing strategic partnerships, and integrating the program with other university initiatives, ensuring premises, resources, and support for its development.

These strategies reflect the commitment to creating a university environment that transmits knowledge and the integral development of students, encouraging them to become agents of change in their communities.

Based on the case of Entrepreneurial Education at PUCRS, it is possible to think about implementing educational actions from different perspectives, which can be operationalized in different orders, isolated or complementary, according to the planning and prioritizing of each higher education institution. Figure 4 presents five nodes with strategies for implementing entrepreneurial education in universities based on the path taken by PUCRS.

The Transversality of Entrepreneurial Education was the starting point for implementing Entrepreneurial Education at PUCRS. It is a composition of optional strategies, such as offering elective courses and events on the topic, in which professors, students, and the interested community can participate by joining. This possibility, in general, provides the opportunity to integrate entrepreneurial education across several courses.

The Entrepreneurial Education Curricularization took place during a period of consolidation of the commitment to Entrepreneurial Education at PUCRS, aiming to strengthen the development of entrepreneurial skills among students from all areas of knowledge, with appropriate themes, methodologies, and resources that encourage active participation of students and professors. This path makes it

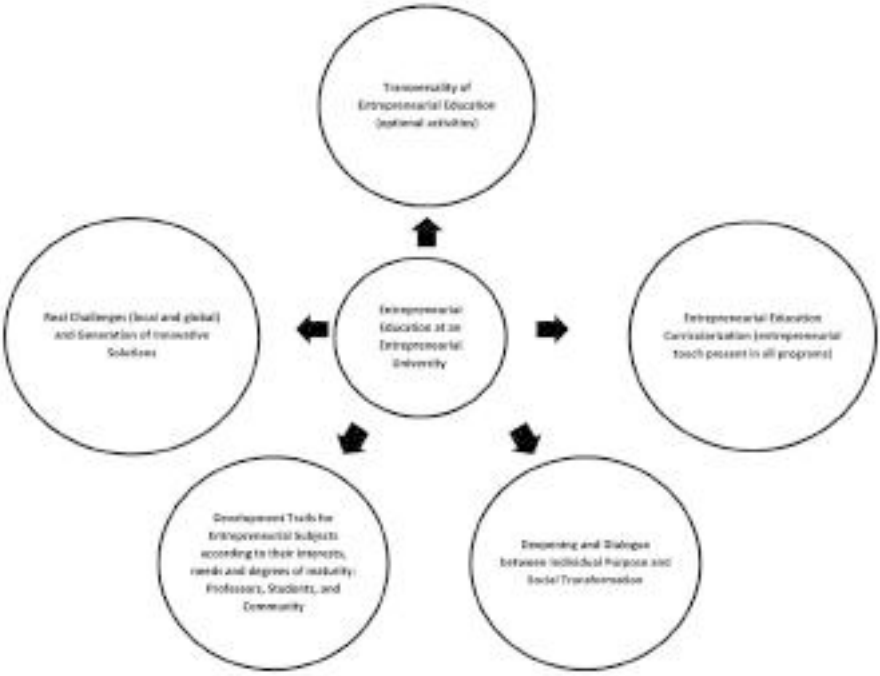

Fig. 4 Entrepreneurial education at PUCRS. Note: Authors (2024)

possible to ensure that all university graduates experience activities related to entrepreneurship and expand their skills for entry into the world of work.

The Development Trails for Entrepreneurial Subjects are based, following the example of the Entrepreneurship Paths developed at PUCRS, on recognizing the importance of training both professors and students to promote an entrepreneurial culture, which includes offering training, workshops and learning practical opportunities, both curricular and extracurricular. When organizing the trails, which can emphasize the discovery of individual purposes or the generation of business, it is essential to map the interests, needs, and degrees of maturity of the subjects and enable them to access the opportunities most appropriate to their levels of development. The organization of the trails preferably requires a wide range of institutional activities implemented, favoring the customization of the routes.

The Deepening and Dialogue between Individual Purpose and Social Transformation refer to promoting entrepreneurship as a social and personal transformation factor. Encouraging entrepreneurship stimulates economic development and promotes each individual's sense of purpose and personal empowerment. Self-knowledge tools are essential to implementing actions related to this path.

Real, Local, and Global Challenges, as a basis for the Generation of Innovative Solutions, recognize the importance of promoting an entrepreneurial attitude as an essential competence to impact society. This involves transmitting technical

knowledge and cultivating a proactive, innovative, and resilient mindset. In dialogue with society, through companies, governments, and nongovernmental organizations, among others, knowing the reality, its restrictions, and possibilities and proposing solutions that improve it are the basis for training active professionals committed to transforming such realities.

6.2 *Informal Institutional Aspects\Pedagogical Perspectives on Entrepreneurial Education*

When considering the Design of Entrepreneurial Education Programs in Universities, attention is recommended to a pedagogical aspect set in Fig. 5.

When mapping the context, the various stakeholders, such as professors, the community, students, members of society, and the innovation ecosystem, must be actively involved from the conception to the program's implementation. This will ensure that the needs and perspectives of everyone involved are considered.

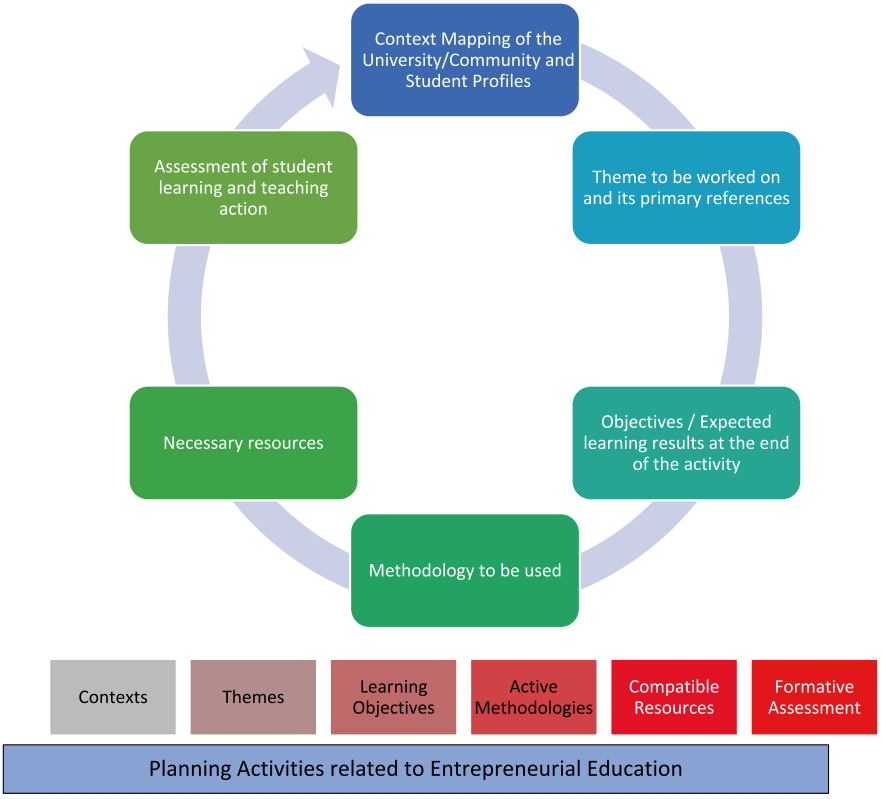

Fig. 5 Curriculum design planning steps

To define the themes to be worked on and their primary references, (a) consider interdisciplinarity, encouraging the integration of different areas of knowledge in the program design, recognizing that each one brings unique perspectives to entrepreneurship. This will promote a more comprehensive and innovative approach to student training; (b) consider the diversity of perspectives, recognizing that the areas of knowledge at the University are different and that, naturally, they approach entrepreneurship and innovation in different ways; (c) see students as protagonists in the processes of creating Entrepreneurial Education programs, as the results demonstrate that activities led by students are as important as institutional ones in training future entrepreneurs (Ribeiro et al., 2022); (d) start from contextualized and attractive local and/or global challenges to engage students.

Concerning the learning objectives intended to be achieved, defining the entrepreneurial skills students must demonstrate throughout and at the end of the educational process is essential. The expected competencies should guide the methodological choices and resources students will access during their learning journey. Furthermore, assessments should make it clear that these skills have been developed. Therefore, if proactivity is expected, it is essential to create opportunities for the student to develop it and have evidence of it.

Regarding methodologies, use active and innovative teaching methodologies that promote the active participation of students, stimulate creativity, and develop entrepreneurial skills. This includes using case studies, practical projects, simulations, and hands-on learning experiences, emphasizing the Service Learning methodology. It is also worth paying attention to adopting a nonlinear approach to program design, allowing for flexibility and adaptability as students advance on their entrepreneurial journey.

Sizing the necessary resources is an important point. When searching for necessary resources, adopting the Effectuation principles proposed by Sarasvathy (2023) is suggested. This approach uses available resources rather than waiting for ideal conditions. Also noteworthy is the construction of collaborative networks and partnerships, both internal and external, aiming to maximize resources and opportunities.

The evaluation of student learning, the results generated, and teaching action are systematic processes that involve analysis and reflection on students' progress concerning educational objectives and the effectiveness of the teaching strategies adopted by the professor. This includes collecting evidence of learning in projects and participation in activities with stakeholders to evaluate the achievement of established goals and the results generated. At the same time, evaluating teaching action involves critically analyzing teaching and mediation practices, aiming to identify strengths and areas for improvement to promote the professor's continuous professional development in monitoring entrepreneurial education.

Measuring program success includes systematically tracking progress, identifying improvement areas, and demonstrating tangible evidence of the impact achieved. This entails collecting relevant data and analyzing it critically to inform continuous program adjustments and improvements. The focus is on developing an

organizational learning culture that promotes effectiveness and excellence in achieving established objectives.

The importance of connecting informal institutional aspects and pedagogical perspectives of entrepreneurial education in the construction of entrepreneurial education programs in universities lies in integrating informal institutional aspects, such as organizational culture and organizational values, with pedagogical perspectives covering teaching methodologies, learning strategies, and educational objectives. Thus, programs can be developed systemically and aligned with the needs and expectations of the academic community, promoting a comprehensive and integrated approach to entrepreneurship for university students. This connection between institutional aspects and pedagogical perspectives also contributes to entrepreneurial education programs' sustainability and long-term impact by ensuring their effective integration into the curriculum and university life.

7 Final Considerations

This chapter discussed the aspects necessary for developing entrepreneurship programs in higher education institutions. The analysis was supported by an empirical case from a Brazilian university, the Pontifical Catholic University of Rio Grande do Sul (PUCRS). The analyzed elements propose recommendations for other institutions to develop entrepreneurial education strategies, from the comprehensive vision of entrepreneur training (intrapreneurship) to business generation (entrepreneurship).

The recommendations focus on two main areas: the institutional strategic context for offering entrepreneurial education and the didactic-pedagogical conditions for organizing educational programs related to entrepreneurship. The recommendations can be adapted to the reality of each institution in a gradual process of developing entrepreneurial education programs.

An approach to investigate the impact of Entrepreneurial Education Programs is recommended for future studies. A promising line of research would be to conduct longitudinal research, allowing a more complete understanding of changes over time and their long-term effects. Furthermore, exploring informal institutional aspects, such as organizational culture and values in force in different contexts, would be fundamental to understanding how these elements influence the implementation and results of entrepreneurial programs. Finally, investigating the pedagogical perspectives of Entrepreneurial Education would offer valuable insights into the best teaching and learning practices in this domain, contributing to the continuous development and improvement of these educational initiatives, with comparative analyses between universities.

Acknowledgments The authors would like to thank Ritieli Novais Klose for her support on systematizing contextual data of IDEAR Lab, which were useful for this work. Particular thanks also goes to Aline Matte Debastiani for her help on formatting chapter and references in accordance with APA guidelines.

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Entrepreneurship Education in Secondary Education (15–18 Years) and Vocational Courses

Lúcia Sousa Rodrigues, Andreia Pinho, and Beatriz Luzio Vaz

Abstract This study analyses the role of entrepreneurship education in secondary education in Portugal, focusing on students aged 15–18 who are enrolled in scientific-humanistic or vocational courses. The study aims to explore how entrepreneurship education can contribute to the enhancement of vocational education while promoting skills essential for integration into the labour market. A qualitative exploratory approach was adopted, based on the analysis of official documents, case studies and scientific literature on educational policies, vocational training and entrepreneurship education programmes. In Portugal, secondary school students can choose between scientific-humanistic courses (level 3 qualification) and vocational courses (level 4), the latter of which have a strong practical component. Despite the increase in demand for this route, vocational education continues to face a social stigma that positions it as a second-rate choice. The integration of entrepreneurship education programmes has shown potential in promoting transversal skills. It is therefore considered a strategic tool for reconfiguring the image of vocational education and enhancing its attractiveness. The results suggest that entrepreneurship education can play a decisive role in preparing young people for a constantly changing labour market, while promoting alternative and inclusive educational pathways. In this sense, it is urgent to strengthen public policies that ensure the structured and sustained presence of entrepreneurship education in all secondary education pathways, as this is crucial for the future of vocational education in Portugal.

Keywords Entrepreneurship education · Secondary education · Vocational courses · Transversal skills · Educational policies

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J. Jardim (ed.), *Entrepreneurial Education in a Global and Digital World*, Studies on Entrepreneurship, Structural Change and Industrial Dynamics,
https://doi.org/10.1007/978-3-032-17008-8_3

1 Introduction

Entrepreneurship education has been playing an increasingly significant role in European educational policies, being recognised as a strategic approach to the development of transversal skills, which are essential for active and innovative participation today (European Commission, 2015; OECD, 2018). In Portugal, this recognition has been reflected in the gradual introduction of programmes and initiatives aimed at promoting entrepreneurial culture at various levels of education, including secondary education (Directorate-General for Education, 2024; Jardim, 2021a).

Young people between the ages of 15 and 18 are going through a period of transformation. Keller et al. (2007) state that young people in this age group face a series of physical, emotional and social changes as they approach the transition to adulthood, a period during which they are still developing skills crucial for shaping their professional future. Some already know what they want, but others are still perplexed at this stage of their lives, specifically at the end of the 9th year, which is designated in our education system as the third cycle of education. In Portugal, Law No. 85/2009 of 27 August extended compulsory schooling until 'the student reaches the age of 18 or completes secondary education' (Law No. 85/2009 of 27 August 2009).

Young people are required to attend school, even if they are sometimes unmotivated to do so or have not chosen the area that best suits their abilities. This situation can result in academic failure. When we discuss academic failure, we are not only referring to failing subjects, but also to non-integration, failure and the consequent dropout. This can happen due to student indiscipline, lack of commitment in class and sometimes even family problems, among other reasons (Marker et al., 2018). More recently, failure has been attributed to excessive internet use and dependence on social media (Psyridou et al., 2024).

The Portuguese education system offers young people aged between 15 and 18 two main paths in secondary education: scientific-humanistic courses, which prepare them for higher education (level 3 qualification), and vocational courses, with a strong practical component and focus on the labour market (level 4 qualification) (Decree-Law No. 55/2018, 2018). Despite the growth in enrolment in vocational courses, these continue to be stigmatised, often associated with lower academic and social expectations (Psyridou et al., 2024). These courses are not just an alternative, but a promising solution to meet the needs of young people seeking an increasingly practical education system that aligns with the realities of the labour market. They also present an opportunity for the economy, as it will be able to count on a skilled workforce dedicated to a specific area, and for society in general, which will have access to motivated professionals who are satisfied with their professional performance.

In this context, entrepreneurship education programmes emerge as a tool for enhancing motivation, initiative and the development of relevant skills, both personally and professionally (Fayolle & Gailly, 2015; Lackéus, 2015). Their implementation in vocational courses not only enhances the value of this educational pathway

but also promotes a more inclusive, innovative and challenge-oriented vision of a constantly evolving labour market, inspiring a new generation of entrepreneurs and professionals (Jardim, 2021b).

This study is particularly significant as it analyses the role of entrepreneurship education in secondary education, with a special focus on vocational courses. By examining its impact on young people's educational trajectories and strategies to strengthen their socio-professional integration, the study provides valuable insights into the potential of entrepreneurship education in the vocational context.

2 Literature Review

Entrepreneurship education has been consolidating itself as a field of growing interest in research and public policy, especially in the context of the global knowledge-based economy. Lackéus (2015) and Fayolle and Gailly (2015) emphasise that entrepreneurship education is not limited to business creation, but involves the development of transversal skills such as creativity, initiative, critical thinking and problem-solving. These skills are increasingly necessary for citizens to adapt and participate effectively in a constantly changing society (Jardim, 2021b).

The European Union, through structural documents such as the Entrepreneurship 2020 Action Plan (European Commission, 2013) and the European Framework for Entrepreneurial Competence (EntreComp) (Bacigalupo et al., 2016), has promoted the systematic integration of entrepreneurship education into education systems as a response to the challenges of youth unemployment, social exclusion and low innovation rates. In EntreComp, entrepreneurial competence is defined as a combination of knowledge, skills and attitudes that enable individuals to identify opportunities, mobilise resources and act creatively to generate economic, social, or cultural value. In Portugal, the Directorate-General for Education's Reference Framework for Entrepreneurship Education (Direção Geral de Educação, 2024) stands out. It frames entrepreneurship education as an integral part of citizenship education and proposes its implementation throughout all stages of education. This document outlines five structural themes—Entrepreneurial Skills, Creativity, Entrepreneurial Action, Environment and Communication—each broken down into sub-themes and corresponding expected learning outcomes. The approach is progressive and coordinated with the levels of education, enabling schools to plan and assess the development of entrepreneurial skills based on concrete descriptors adapted to the age of the students.

Several studies recognise that decisions made between the ages of 15 and 18 are decisive for young people's professional and social future (Schoon & Lyons-Amos, 2017). As such, secondary education is viewed as a crucial stage in shaping personal and vocational identity. The literature highlights the importance of promoting flexible, contextualised training pathways geared towards the development of applicable skills, namely through project-based training and experiential learning, which

are essential pillars of entrepreneurship education (Rehman et al., 2024; Tan et al., 2025; Udeozor et al., 2025; Wang et al., 2025).

When asked about the different options available to young people when embarking on training, in the phase preceding a professional career, the theories are unanimous: education is at the centre of knowledge, especially at present, where knowledge is comprehensive and not limited to the acquisition of theories established in curricula defined by government entities (Hilppö & Stevens, 2024). The transformation of societies and the economy has placed education at the centre of debates, with it being seen as a resource for enhancing countries' value and as a tool for success, both individually and collectively. However, European education systems face the challenge of reducing deeply rooted social, economic and cultural inequalities, which manifest themselves, among other aspects, in the division that exists between educational levels.

Scientific-humanistic secondary education is mainly geared towards further studies in higher education. Its curriculum structure favours a solid academic education, with a focus on theoretical subjects (mathematics, Portuguese, foreign languages, sciences, history, among others), organised according to specific areas (Science and Technology, Socio-economic Sciences, Languages and Humanities and Visual Arts) (Directorate-General for Education, 2023). This is a more traditional, more y path, which continues to be perceived socially as the most prestigious, especially among families with higher educational capital (Costa et al., 2024).

Vocational education is often associated with students with lower academic performance and social difficulties, which contributes to its stigmatisation and a perception of lower prestige, despite its transformative potential (Cao et al., 2024; Jaedun et al., 2024; Winkler et al., 2025). However, according to the literature, when properly structured, vocational courses value practical knowledge and links to the world of work, contributing to the qualification of young people who would otherwise be at risk of dropping out of school or exclusion (Cao et al., 2024; Romanova, 2022). This type of education also enables the mobilisation of contextualised and integrated knowledge, promoting meaningful learning that fosters inclusion and employability (Cao et al., 2024). The characteristics of vocational education, specifically the inclusion of a more practical component alongside theory, the implementation of internships and the completion of final projects, provide an excellent opportunity for integrating entrepreneurship education across the board (European Commission, 2009).

The Professional Aptitude Project (PAP), for example, presents a clear opportunity to apply the principles of entrepreneurship education, as it requires students to demonstrate initiative, planning, teamwork and problem-solving skills in a context closely aligned with the reality of the workplace (Costa et al., 2024).

Entrepreneurship education plays a strategic role in promoting the development of essential skills for the twenty-first century in these contexts. Developing skills involves mobilising knowledge, abilities and attitudes in solving concrete problems, going beyond teaching models based exclusively on memorisation and the unidirectional transmission of content (Jardim, 2021a). This paradigm, centred on active

learning, aims to articulate diverse knowledge in an integrative and practical perspective.

A review of the literature supports the view that entrepreneurship education, when applied in a strategic and structured manner, can not only enhance the success of vocational education students but also contribute to their social and pedagogical appreciation of all forms of education.

3 Methodology

A qualitative methodological approach was followed in this study, with two strands: a theoretical analysis and a comparative empirical analysis. In the first phase, we aimed to understand the various alternatives available to young people between the ages of 15 and 18 within the Portuguese education system for completing secondary education. To this end, a document review was carried out, which included consulting legislation and official standards from the Ministry of Education, as well as analysing reference works by various authors addressing the curricular organisation of secondary and vocational education in Portugal. This stage allowed us to define and characterise the main educational pathways: scientific-humanistic courses and vocational courses, corresponding to qualification levels 3 and 4, respectively.

Subsequently, statistical data on the Portuguese youth population in this age group were analysed to map the pathways chosen by students and identify trends in school attendance and completion rates. The data were collected from official sources, such as the Directorate-General for Education and Science Statistics (DGEEC) and processed in a way that allows for a comparative reading between existing educational pathways.

The joint analysis of the collected information made it possible to construct an integrated perspective on the training options available, their attractiveness to young people and the factors that condition or influence these choices. The cross-referencing of statistical data and theoretical analysis led to the identification of patterns and the formulation of conclusions about the role that Entrepreneurship Education can play in enhancing and stimulating career paths in secondary education.

4 Results and Discussion

The analysis of the data collected in this research provided an in-depth understanding of the two main pathways in Portuguese secondary education—scientific-humanistic courses and vocational courses—with a focus on the role that entrepreneurship education can play in enhancing the value of the vocational pathway.

At the international level, the OECD and the European Union have been advocating a balance between academic and vocational pathways, recommending that around 50% of secondary school students choose each of these options (Antunes, 2020). This position aims to ensure universal compulsory schooling while also addressing structural inequalities that have historically impacted students' access to and success in each educational pathway. In fact, significant social, economic and cultural differences persist between students following each path, often resulting in inequalities of opportunity (Antunes, 2020; Costa et al., 2024).

In the case of Portugal, data from the Directorate-General for Education and Science Statistics (DGEEC, 2023) reveal a predominance of scientific-humanistic courses (52.7% of students in 2021/2022). However, vocational courses have been consolidating their presence (32.8%), especially since their integration into the public secondary school system in 2004. This evolution reflects the implementation of educational policies focused on reducing early school leaving, diversifying training opportunities and enhancing the value of technical training in response to labour market demands.

Despite these advances, the vocational pathway remains associated with a student profile characterised by irregular school attendance, predominantly male and a history of retention (Pinto et al., 2020). However, vocational courses have higher completion rates than the scientific-humanistic pathway, with a rate of 95.6% in 2017 (compared to 91.3% in general courses), which contradicts some persistent negative perceptions (DGEEC, 2025).

The structure of vocational courses, based on modular training with a strong technical and practical component, culminates in a work placement in a real work context and the completion of a Professional Aptitude Project (PAP), allowing students to apply the knowledge they have acquired and build their professional profile (Pinto et al., 2020). This competency-based model is very similar to the guidelines for entrepreneurship education, which advocate for active, contextualised and problem-solving-oriented learning (Jardim, 2021a).

On the other hand, scientific-humanistic courses, although structured with a view to pursuing higher education, do not systematically integrate practical components or those geared towards developing entrepreneurial skills, which limits their suitability for students with more applied or professional motivations (Directorate-General for Education, 2023).

From a quantitative point of view, the publication Education in Numbers 2023 (DGEEC, 2023) shows that, between 2014/2015 and 2021/2022, the percentage of students completing scientific-humanistic courses within the expected time increased from 55 to 79%, while in vocational courses the rate rose from 53 to 70%, reflecting significant improvements in the internal effectiveness of both pathways. These data demonstrate the impact of policies aimed at recovering learning and strengthening pedagogical support that have been implemented in recent years.

The motivation of students who choose the vocational pathway is primarily based on the practical and applied nature of the content (51%), the possibility of completing the 12th year (34%) and the prospect of entering the labour market (13%) (Costa et al., 2024). The value placed on practical experience and the

acquisition of transferable skills for real-life contexts is therefore one of the most significant advantages of this pathway. Entrepreneurship education, by developing skills such as initiative, autonomy, critical thinking and creativity, can further enhance the potential of this type of education by preparing students not only for employment but also for active and adaptive participation in the world of work. The integration of entrepreneurship education into vocational courses, and possibly also into the scientific-humanistic pathway, could enable a more holistic approach to training young people, contributing to the overcoming of the duality between technical and academic training, as well as to the construction of personalised and meaningful pathways. The literature reinforces this perspective by highlighting that skills-based teaching breaks with the traditional model based on memorisation and favours the mobilisation of knowledge for specific contexts (Costa et al., 2024).

Finally, it is essential to note that, although vocational courses are well-aligned with the objectives of entrepreneurship education, their practical implementation requires investment in teacher and trainer training, the development of flexible curricula and coordination among schools, businesses and the community. These factors are crucial to ensuring the quality of training, equity of access and sustainability of results (Antunes, 2020; DGEEC, 2025; Jardim, 2021a; Pinto et al., 2020).

5 Conclusion

The analysis carried out in this study affirms that the valorisation of vocational courses has been progressively incorporated into national education policies, in line with the guidelines of the European Union and the OECD. Rapid technological and economic transformation, coupled with the emergence of new skills and professional profiles, has compelled education systems to reassess their strategies, with entrepreneurship education at the forefront of current educational reforms.

The data reveal that vocational courses have established themselves as a legitimate and effective training pathway, especially for students seeking an alternative to the traditional academic model, with a strong focus on employability. In some regions of Portugal, enrolment in vocational courses by young people aged between 15 and 18 has already reached 50%, indicating a significant shift in the perception of and uptake of this educational pathway (DGEEC, 2023). Nevertheless, challenges remain in relation to social segmentation, the stigma associated with this pathway and the need to ensure quality and equality in the training offered.

In this context, entrepreneurship education emerges as a fundamental pedagogical approach to strengthening vocational courses, promoting the development of transversal skills such as autonomy, critical thinking, creativity and initiative, which are increasingly valued in the labour market and in society. The articulation between theoretical knowledge, practical experiences and the development of entrepreneurial projects, such as the Professional Aptitude Project (PAP), reinforces the applicability of the knowledge acquired and brings the school closer to the real world.

In short, entrepreneurship education can be a powerful tool for educational transformation, helping to make school pathways more inclusive, meaningful and tailored to the challenges of the twenty-first century. By promoting an entrepreneurial culture within schools, we are preparing a generation of young people who are more autonomous, articulate and capable of building their own futures.

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Entrepreneurship Education in Higher Education Institutions

Eduardo Pinto Vilas Boas and Charles Bonani Giglio

Abstract This theoretical article discusses entrepreneurship education in higher education. Different perspectives, pedagogical approaches, and expected outcomes are analyzed. The study is based on a literature review, presenting three perspectives of entrepreneurship education (about, for, and through), different methodological views, and the objectives to be achieved with entrepreneurship education. The results indicate that active methodologies enhance the development of entrepreneurial competencies. Finally, the main research gaps in entrepreneurship education are identified, and directions for future research are proposed.

Keywords Entrepreneurship education · Higher education · Entrepreneurial competencies · Entrepreneurial intention

1 Introduction

Entrepreneurship is a phenomenon of great importance for both the economy and society. Several authors have demonstrated its relevance for social well-being (Martínez et al., 2010), as a driver of innovation and technical progress (World Economic Forum, 2009), and for a country's economic growth and development (Ribeiro et al., 2022; Breznitz & Zhang, 2020).

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J. Jardim (ed.), *Entrepreneurial Education in a Global and Digital World*, Studies on Entrepreneurship, Structural Change and Industrial Dynamics,
https://doi.org/10.1007/978-3-032-17008-8_4

Due to this, it is in everyone's interest to have an increasing number of entrepreneurs who are more successful in their ventures, thus avoiding resource waste. For this reason, governments and other institutional actors have directed efforts and resources toward implementing policies that promote entrepreneurial activity in a country (Bylund & McCaffrey, 2017). However, for this phenomenon to grow, it is necessary to identify or develop individuals with the intention to undertake entrepreneurial ventures, as well as define the best way to prepare them, thereby reducing the likelihood that their businesses will join the unfortunate statistics of failure (SEBRAE, 2014).

The World Economic Forum (2009) report points out that entrepreneurial skills, attitudes, and behaviors can be learned. In other words, it is possible to teach any interested individual to become a better entrepreneur. This training is known as entrepreneurship education (Fayolle et al., 2006). It can take many forms, whether through formal or informal education, over shorter or longer periods, and in various stages of a person's life—from preschool to postgraduate studies and even beyond, within the concept of lifelong learning (European Commission, 2020).

One of the key moments for promoting entrepreneurship education is in higher education, when individuals are being prepared for the labor market. Higher education is where the main professional competencies of individuals are developed, and those related to entrepreneurship are seen as a distinctive element in this training. They provide students with knowledge and skills that can enhance their careers and support them in pursuing independent paths, such as developing their own businesses. Thus, entrepreneurship education in higher education has gained prominence for its potential to develop competencies essential in the modern world. It is not limited to teaching about business creation and management but also emphasizes the development of entrepreneurial competencies.

The importance of entrepreneurship education transcends technical training, as it prepares individuals to be proactive, flexible, and committed to seeking creative solutions to contemporary challenges. Moreover, entrepreneurship education in higher education can serve as a valuable strategy for integrating teaching, research, and community outreach, providing practical relevance to knowledge and fostering the development of competencies demanded by today's market.

Ribeiro et al. (2022), Nabi et al. (2017), and Martínez et al. (2010) noted a growth in academic publications in recent years, as well as in the creation of entrepreneurship courses and programs. However, much remains to be understood about how to make entrepreneurship education in higher education more effective.

Therefore, the objective of this chapter is to analyze, based on current literature, different perspectives, pedagogical approaches, and expected outcomes of entrepreneurship education. This will allow for the identification of gaps in practice and research in this field.

2 Literature Review

2.1 What Is Entrepreneurship Education?

Entrepreneurship education has gained relevance in academia in recent years, as pointed out by Ribeiro et al. (2022), Nabi et al. (2017), and Martínez et al. (2010), among others. To better understand this perspective, Vilas Boas and Nascimento (2020) conducted a bibliometric study with the aim of understanding the evolution of studies on entrepreneurship education and how they are structured both intellectually and conceptually. The study found that the number of articles on the topic increased considerably after 2008. Regarding intellectual structure, the most prolific authors at the time were Matlay, Fayolle, and Era, all entrepreneurship professors at European universities. According to Vilas Boas and Nascimento (2020), this points to a predominance of a European view of the topic, with a stronger presence in entrepreneurship studies rather than in education studies.

In addition to the relevance of academic publications, the practical implementation of entrepreneurship education has also been the subject of several studies. Martínez et al. (2010) published the results of a survey conducted in 2008 across 38 countries commissioned by the Global Entrepreneurship Monitor, addressing entrepreneurship education and training and their effects on business creation. The findings showed that in most countries surveyed, experts believed that education and training, whether in or outside schools, were still inadequate. This reinforces the need for more knowledge on the subject.

More specifically, Martin et al. (2013) and Katz (2003) noted that entrepreneurship education and training are rapidly expanding within universities worldwide.

Despite the importance of entrepreneurship education, there are still differing views on how to define it. Fayolle et al. (2006) describe entrepreneurship education as a program aimed at developing entrepreneurial knowledge or skills. Martínez et al. (2010), on the other hand, define it as the development of knowledge and skills about or for entrepreneurship. These authors distinguish entrepreneurship education from entrepreneurial training, which is defined as "the building of knowledge and skills in preparation for starting a business." Thus, the goal of entrepreneurial training would be more specific, while the goal of entrepreneurship education may be broader. In the present article, any action aimed at developing entrepreneurial individuals is considered entrepreneurship education.

A third definition is provided by Lackéus (2015), who characterizes entrepreneurship education as a process that combines theoretical learning ("about"), skill development ("for"), and practical value creation ("through"). This perspective will be explored in more detail throughout the article.

As will be seen, the development of entrepreneurial knowledge, skills, and attitudes is one of the expected outcomes of entrepreneurship education, which is believed to lead to a more positive attitude toward entrepreneurship among students and, ultimately, to the creation of more and/or more successful businesses. In the following sections, we will briefly review how entrepreneurship education began to

be taught in higher education, followed by a deeper discussion of how it has been implemented and what outcomes it can deliver.

2.2 The Evolution of Entrepreneurship Education

Although there are divergent views regarding the origins of entrepreneurship education, we adopt the perspective of Fayolle (2013), who asserts that it began in higher education, where it was introduced as a course in various academic programs. This perspective reinforces the importance of entrepreneurship education's development within higher education—both for its pioneering role and for its continued relevance. In fact, higher education has become a model for entrepreneurship education at other educational levels.

Torrance et al. (2013), along with Katz (2003), presented a historical overview of entrepreneurship education in higher education. They noted that as early as 1947, Harvard University offered a course on "New Enterprises," aimed at war veterans returning from World War II. According to Torrance et al. (2013), it was in the 1970s that entrepreneurship courses began to appear more regularly in the formal curricula of higher education institutions in a variety of formats. This trend accelerated in the 1980s and 1990s, and by 2008, there were more than 5000 entrepreneurship courses being taught, with over 400,000 students enrolled each year and 9000 faculty members involved.

According to Vilas Boas and Nascimento (2020, p. 24), entrepreneurship education has also increased in importance in Brazil. "In the 1990s, it appeared primarily as a subject in business administration programs, but over time, its importance grew, and today it is present in the curricula of a wide range of higher education programs."

Although we did not find quantitative data on entrepreneurship education in higher education in Europe, it is possible to understand that it has also expanded in recent years. In 2003, the European Union published a Green Paper (European Commission, 2003) highlighting the importance of entrepreneurship education. Following this document, several initiatives and reports were implemented, such as the European Commission, EACEA, and Eurydice (2016) report, which emphasizes the need to integrate entrepreneurship into school curricula. These initiatives reinforce the general importance of entrepreneurship education for the European Union and have certainly influenced its expansion at the higher education level on the continent.

2.3 Education About, For, or Through Entrepreneurship

One of the most relevant discussions in the field of entrepreneurship education concerns the different pedagogical approaches adopted by educational institutions, especially at the higher education level. Among the most commonly used

classifications is the framework that conceptualizes entrepreneurship education as being "about," "for," or "through" entrepreneurship, as systematized by authors such as Martínez et al. (2010), Lackéus (2015), Lackéus et al. (2016), and Ribeiro et al. (2022).

These three approaches represent distinct paradigms regarding formative focus, methods used, and expected outcomes. Education *about* entrepreneurship emphasizes theoretical knowledge of the phenomenon, covering topics such as entrepreneurial ecosystems, economic theories, and case studies. Its main objective is to provide a solid conceptual foundation, although it may have limitations regarding practical application (Martínez et al., 2010; Fayolle, 2013).

Education *for* entrepreneurship seeks to develop entrepreneurial skills, such as opportunity identification and resource mobilization, as well as tools for business creation (e.g., Business Model Canvas, business plans) and management (e.g., finance and marketing). This approach is usually implemented through active methodologies, such as simulations, workshops, and academic competitions, focusing on technical training for entrepreneurial action (Bae et al., 2014). However, it has been criticized for its tendency to prioritize formal planning over flexibility and adaptability, which are essential in uncertain contexts.

More recently, the literature has highlighted education *through* entrepreneurship, a paradigm centered on experiential learning. In this approach, students actively participate in real entrepreneurial processes, such as business creation, prototyping, and stakeholder engagement, developing competencies through real-world challenges (Lackéus et al., 2016; Ribeiro et al., 2022). Cooper et al. (2004) emphasize that stepping outside the classroom and experiencing authentic situations promotes deeper and more lasting learning. Hannon (2006) highlights the importance of personally meaningful experiences that allow students to construct entrepreneurial meaning and identity.

Complementing this perspective, Lackéus (2015) proposed a three-dimensional model synthesizing the three approaches: education about (knowledge transmission), for (skills development), and through (practical value creation). This framework has been cited by various authors as a way to integrate different methodologies and expand the impact of educational initiatives.

Given this context, an emerging consensus in the literature suggests that the most effective entrepreneurship education programs are those that integrate elements from all three paradigms. This integration creates a developmental continuum in which students move from conceptual understanding to skill acquisition and ultimately to real-world application (Nabi et al., 2017; Lackéus et al., 2016).

2.4 Planning-Based vs. Learning-Based Approaches

Another ongoing debate in the literature relates to *how* and *what* should be taught in entrepreneurship education. Bae et al. (2014) contributed to this discussion with a meta-analysis of entrepreneurship education and entrepreneurial intention. The

authors recognize a wide variety of pedagogical designs but classify them into two main groups: business plan development and new venture creation.

In the business plan approach, students acquire knowledge and skills that could be important if they want to create a new venture, which should increase their entrepreneurial intention. When focused on new venture creation, the course emphasizes practical steps for starting a business, sometimes even encouraging students to launch a new venture during the course.

Drawing a parallel, the type of education focused on business planning as described by Bae et al. (2014) aligns with what Ribeiro et al. (2022) and Martínez et al. (2010) classify as education *about* and *for* entrepreneurship. Education focused on new venture creation is what other authors have called entrepreneurial training and education f*or* entrepreneurship. On the one hand, there appears to be a more in-depth approach to understanding entrepreneurship and the tools available; on the other hand, there is an intention to place students in situations similar to those faced by entrepreneurs, so they learn to think and act entrepreneurially and later apply this knowledge.

In their study, Bae et al. (2014), after evaluating various previous studies, concluded that it is not possible to state whether business plan-oriented or new venture creation-oriented education has a greater effect on students' entrepreneurial intention. Regardless of the course design, the outcomes in terms of influencing entrepreneurial intention seem to be similar.

2.5 Teaching Methods

Beyond the debate between business plan development and new venture creation, other authors argue that experiential methods are more effective than expository or passive methods for entrepreneurship education. It is important to note that in most contemporary Higher Education Institutions, it is rare to find a course where students are entirely passive, for example, only attending lectures.

Many authors highlight experiential learning, or "learning by doing," as the most effective approach (Martínez et al., 2010; Ribeiro et al., 2022; Nabi et al., 2017) for developing entrepreneurial behaviors and skills. Ribeiro et al. (2022) refer to several experiential tools, including concrete experiences, practical activities, and contact with real markets and contexts.

Ribeiro et al. (2022), studying previous authors like Cooper et al. (2004), Silva and Patrus (2017), and Rocha and Freitas (2014), identified various practices for teaching entrepreneurship, ranging from more active to less active, including lectures, case studies, readings and videos, seminars or talks with entrepreneurs, company visits, organization-focused projects, business plan development, incubator experiences, business games or simulations, junior enterprises, research or extension projects, group or individual theoretical or practical assignments, discussion groups, brainstorming, business creation, individualized mentoring, product creation, suggested readings, and business plan competitions.

The growing importance of experiential approaches is confirmed by a meta-analysis conducted by Nabi et al. (2017), which reviewed more than 159 studies on entrepreneurship education. The authors concluded that programs based on real-world experiences ("through" entrepreneurship) tend to have a greater impact on the development of entrepreneurial competencies and students' entrepreneurial intention. However, they also warned that most of the evaluations in the studies reviewed were short-term: approximately 70% of them measured results immediately after the course ended, without considering long-term effects on graduates' career paths.

Based on the theoretical insights discussed, it is clear that students need access to active pedagogical tools that allow them to experience the realities faced by entrepreneurs. This experiential exposure is critical to developing their skills. However, entrepreneurship education should not be reduced to merely instrumental training on how to start or even manage a new venture. It must go beyond that, also incorporating conceptual foundations that help entrepreneurs understand the context in which they operate and support their long-term personal and professional growth.

Even so, questions remain about the approaches currently adopted by leading Higher Education Institutions. The key inquiry is whether these institutions continue to adopt a traditional approach, aiming to increase students' entrepreneurial intentions and thereby stimulate new venture creation or whether they have adopted a more modern vision, where entrepreneurship is viewed as a lifelong competence. According to this latter perspective, entrepreneurship education becomes a language for developing competencies that individuals can apply across a wide range of activities, not necessarily by starting their own businesses.

2.6 Desired Outcomes of Entrepreneurship Education

Regardless of the methods and approaches—whether about, for, or through entrepreneurship—it is necessary to consider the expected outcomes. These can be thought of in different stages. In the initial stage, entrepreneurship education should be able to develop students' entrepreneurial knowledge, skills, and possibly attitudes (Martínez et al., 2010; Martin et al., 2013; Ribeiro et al., 2022). The combination of knowledge, skills, and attitudes is defined by some authors as entrepreneurial competencies.

In terms of developing skills, knowledge, attitudes, and entrepreneurial competencies, various authors have listed different learning objectives for entrepreneurs. For example, Martínez et al. (2010) highlighted opportunity recognition, creativity, leadership, self-efficacy, and innovation. Ribeiro et al. (2022), citing Martin et al. (2013), mentioned opportunity recognition, decision-making under uncertainty, and navigating new venture creation processes.

To operationalize these competencies, the EntreComp Framework (European Commission, 2020) was developed based on extensive research. It offers a model structured around three interconnected axes: Ideas and Opportunities, Resources,

and Into Action. The same research suggests ways to measure the development of these competencies.

This is important because it helps address a problem identified by Nabi et al. (2017), who noted that the absence of standardized metrics for assessing entrepreneurial competencies limits comparisons between programs and obscures critical factors such as resilience and adaptability.

However, developing students with higher levels of entrepreneurial competence should not be the only result of entrepreneurship education; these competencies are only valuable if used for a purpose. Ribeiro et al. (2022) and Bae et al. (2014) argue that, beyond developing entrepreneurial competencies, entrepreneurship education should help increase engagement in new venture creation—a view similar to Martínez et al. (2010), who found that individuals who believe they have the skills and knowledge to start a business are more likely to do so.

From this perspective, if the ultimate goal of entrepreneurship education is to promote the creation of new businesses or the improvement of existing ones, then entrepreneurial intention becomes a key indicator. Since starting a business may not happen during a student's academic journey—or even in the short term—entrepreneurial intention serves as a proxy for future business activity.

If business creation is the intended outcome of entrepreneurship education, then increasing entrepreneurial intention can be considered a good predictor, given that intention has been shown to precede future behavior (Ajzen, 1991). Entrepreneurial intention is widely used by scholars such as Bae et al. (2014), Crant (1996), Krueger et al. (2000), and Wilson et al. (2007). With minor variations, it is generally defined as the desire to own or start a business.

Bae et al. (2014) conducted a meta-analysis of several studies to assess the impact of entrepreneurship education on students' entrepreneurial intentions. They found a small but positive relationship between the two. However, their analysis also revealed studies showing null or even negative correlations, indicating that the relationship still requires further clarification.

Thus, entrepreneurship education is important for making students more likely to start new businesses or increasing the probability that the businesses they create (or already own) will be more sustainable and profitable. Since these are long-term outcomes and therefore difficult to verify, some authors use the construct of Entrepreneurial Intention (i.e., a positive intention toward entrepreneurship and the intention to start a new business in the future) as a proxy for these results. In other words, if in the short-term entrepreneurship education can positively influence an individual's entrepreneurial intention, it can be said that the entrepreneurial competence developed has made a positive change in the student's life and/or career.

There are also divergent views. Not all studies have found a direct relationship between entrepreneurship education and the existence of more or better entrepreneurs. For this reason, Martin et al. (2013) conducted a meta-analysis of previous studies and concluded that some show a positive relationship, while others show a negative one. Some authors analyzed by Martin et al. (2013) believe that increased

entrepreneurship education can make individuals more aware of the risks of entrepreneurship, which may decrease their intention to start a business. However, the meta-analysis found that the positive impact is increasing interest and attitudes toward entrepreneurship among students who participate in these courses, as well as improving financial performance as entrepreneurs (Martin et al., 2013).

Thus, although there are divergent views, robust studies confirm the ability of entrepreneurship education to positively influence the development of entrepreneurial competencies, which in turn can positively impact entrepreneurial intention and, in the future, business creation.

Therefore, the literature suggests that, although there is no absolute consensus, there is consistent evidence that entrepreneurship education can generate positive impacts both in competency development and in entrepreneurial intention, directly influencing the innovation ecosystem and the creation of new ventures.

3 Discussion

The theoretical review presented in this article highlights that entrepreneurship education has become an essential tool not only for fostering the creation of new businesses but also for developing entrepreneurial competencies that can be valuable in various professional contexts (Ribeiro et al., 2022; Martínez et al., 2010).

The analysis of pedagogical approaches (about, for, and through entrepreneurship) reveals a range of possibilities depending on the objectives of the entrepreneurship course. However, there is a clear trend toward moving away from knowledge-transmission models and adopting experiential learning approaches. This transition has been accompanied by the growing use of active methodologies such as real-life projects, simulations, incubation activities, and prototyping experiences, which allow students to learn through action (Lackéus et al., 2016; Cooper et al., 2004; Hannon, 2006). In this context, practices based on iterative learning and hypothesis testing are gaining preference over those centered on formal business plans (Bae et al., 2014) or traditional managerial skill development.

Nonetheless, the effectiveness of these approaches depends on a variety of contextual factors. Studies such as those by Martin et al. (2013) and Nabi et al. (2017) show that although entrepreneurship education can positively influence entrepreneurial intention and competency development, outcomes vary based on program structure, student profile, and institutional conditions. This demonstrates the need for further research to identify which approaches and tools should be used in entrepreneurship education, depending on the intended objectives.

It is important to emphasize that there is no one-size-fits-all solution. Educators must consider the desired learning outcomes and the context in which the programs are delivered. Higher education programs vary widely. In some institutions, entrepreneurship education may be seen as a strategic direction for all students, while in

others it may be designed specifically for a select group interested in launching their own ventures. Even within these groups, the type of venture envisioned can differ significantly. Students in engineering or business programs may aim to launch high-growth startups, whereas students in healthcare or law may be planning to open their own clinics or offices as a form of self-employment, without necessarily aiming for rapid growth. With such diverse possibilities, it is only natural that the educational approaches must also be varied.

The literature review also reveals that the lack of longitudinal studies hinders understanding of the long-term impacts of entrepreneurship education, especially regarding the sustainability of created ventures and the professional trajectories of graduates. Moreover, the absence of standardized metrics for evaluating entrepreneurial competencies limits comparisons between programs and weakens the ability to generate consistent evidence of effectiveness. Frameworks such as EntreComp (European Commission, 2020) offer promising paths for developing these metrics.

Currently, most studies use the increase in entrepreneurial intention as the main indicator of program effectiveness, largely because there are consolidated instruments available for measuring it. However, this metric may not always be the most appropriate, depending on the specific goals of a program.

Table 1 summarizes the key findings of this article and offers suggestions for educators involved in entrepreneurship education at the higher education level.

In light of the changes in both the job market and educational landscape, entrepreneurship education in higher education must be designed to adapt to local realities and the diverse needs of students across disciplines. The challenge for higher education institutions is to create models that are both scalable and adaptable to their unique contexts.

Table 1 Summary of findings

Analyzed dimension	Current evidence	Recommendations
Pedagogical Approaches	Three main approaches: about, for, and through entrepreneurship	Integration of all three paradigms increases educational impact
Teaching Methods	Lectures, simulations, projects, incubators, real-world experiences	Active and experiential methods promote deeper learning
Expected Outcomes	Increase entrepreneurial intention and entrepreneurial competency	Develop ways to measure entrepreneurial competency development
Limitations and Gaps	Lack of longitudinal data; regional asymmetries; no standardized metrics	Need for greater empirical rigor and contextual relevance
Future Research Directions	Longitudinal studies; international comparisons; application of EntreComp	Develop scalable, evidence-based educational models

Source: The authors

4 Conclusion

Entrepreneurship education in higher education has undergone a significant transformation in recent decades, establishing itself as an interdisciplinary field that goes beyond teaching business creation skills. It now focuses on developing entrepreneurial competencies for broader professional applications. This theoretical article examined the evolution of entrepreneurship education, its pedagogical approaches, the teaching methods adopted, and the expected outcomes, based on an extensive literature review.

The findings reveal that the most effective programs are those that integrate the three approaches (education about, for, and through entrepreneurship) by combining theoretical knowledge with practical action through active methodologies such as simulations, real-world projects, incubation activities, and experiential learning (Lackéus et al., 2016; Ribeiro et al., 2022). This integrated approach enhances the development of entrepreneurial competencies that can be applied in business creation, intrapreneurial careers, or social impact initiatives.

However, significant challenges remain in consolidating universally effective models of entrepreneurship education. This article identified three critical gaps:

- The absence of longitudinal data to assess the impact of entrepreneurship education throughout graduates' careers (Nabi et al., 2017).
- Geographic asymmetry in the scientific literature, with an overrepresentation of North American and European models at the expense of Global South contexts (Vilas Boas & Nascimento, 2020).
- Methodological divergence regarding the measurement of entrepreneurial competencies, compromising systematic comparisons and evaluations (Martin et al., 2013; European Commission, 2020).
- In light of these limitations, this study proposes the following directions for future research:
- Conducting longitudinal studies (10 years or more) tracking the relationship between educational experiences and venture sustainability.
- Carrying out comparative studies between regions with different sociocultural and institutional realities (e.g., Latin America, Sub-Saharan Africa).
- Developing standardized assessment instruments based on frameworks such as EntreComp, allowing consistent measurement of entrepreneurial competencies in different contexts.

Beyond these research directions, there is also a need for educational models that consider the diversity of student profiles, their backgrounds, goals, and the opportunities offered by both local and global entrepreneurial ecosystems.

Entrepreneurship education should be understood as more than a mechanism to stimulate business creation; it is a formation strategy for individuals wishing to develop entrepreneurial competencies. For this potential to be fully realized, Higher

Education Institutions must evaluate their context and students' objectives, invest in innovative pedagogical practices, and implement continuous evaluation processes. The entrepreneurship education of the future will be that which forms students who create value for society, not just company founders.

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Programs to Promote Women Entrepreneurship

Elsa Cristina Vieira

Abstract This chapter critically examines the persistent gender gap in entrepreneurial ecosystems, focusing on the structural, cultural, and educational barriers faced by women entrepreneurs in Portugal. Drawing on recent international literature and empirical data from 80 qualitative interviews with Portuguese women entrepreneurs, the study explores the multidimensional nature of women's entrepreneurial trajectories, including social expectations, credibility deficits, and the interplay between personal and professional roles. The findings reveal that entrepreneurial motivation among women is often driven by necessity rather than opportunity, shaped by social constructs and historical inequalities. The study also highlights the latent influence of early informal learning, family environment, and socio-cultural norms on entrepreneurial behavior. By integrating global policy perspectives and updated recommendations from sources such as GEM, OECD, and UN Women, the chapter argues for the need to restructure entrepreneurial education through gender-responsive frameworks, digital inclusion, and mentoring-based methodologies. It concludes that fostering inclusive and diverse entrepreneurial ecosystems is both a social imperative and a strategy for sustainable innovation and economic development.

Keywords Women entrepreneurship · Gender equality · Inclusive policies · Entrepreneurial education · Cultural change · Qualitative research · Portugal

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J. Jardim (ed.), *Entrepreneurial Education in a Global and Digital World*, Studies on Entrepreneurship, Structural Change and Industrial Dynamics,
https://doi.org/10.1007/978-3-032-17008-8_5

1 Introduction

The aim of this chapter is to reflect on women's contribution to entrepreneurship. For definition, the concept of entrepreneurship is here identified as innovative activities that develop the society: in social organizations, in government policies, in cultures, and, of course, in economic results. Entrepreneurship is also here as "the big door" to increase a healthy and balanced society, with sustainable growth. Entrepreneurship is part of human capacity and should be enriched by its diversity of perspectives and skills. But even in this proposal, according to the current literature collection, there's still a gender gap. Women are less represented in Portuguese companies. This chapter intends to produce confronts in the gender issues, reflecting ways to change these cultural debts and develop new educational frameworks based on the empowerment of women since childhood. The main contribution in this matter is to produce a strong culture for an entrepreneurial society.

In order to produce the desired innovation, it is necessary to have human diversity and equal challenges, so it makes no sense to the existing gaps between gender issues. So, the questions to reflect are why exists low representation in women's contribution and how to engage their empowerment in entrepreneurial activities.

Reviewing the literature (CIG, 2023; GEM, 2023) and confronted with empirical results collected on 80 women living in the Portuguese territory, this chapter compares the policies and entrepreneurial programs of other countries with the Portuguese territory.

As a result, it's possible to analyze the difficult challenge of being a woman and an entrepreneur, because it becomes a multitasking life; they have to take care of the family, of their child, or even of their parents, as a cultural obligation in the society. At the same time, women must be creative and resilient in a highly competitive world.

Above all, this paper it's a reminder that diversity of perspective is the only way to improve entrepreneurship, and that women and men are equally needed to face the challenges. That's why this chapter also intends to open new lines in this subject, about what is possible to do in the Portuguese ecosystem when it comes to women empowerment.

2 The State of Art

This chapter reviews the positions of women in society and their evolution over the years. It's sought to integrate the women trajectory in job tasks, also to understand its contribution to the global market and therefore compare its social impact, economic, and political in the Portuguese ecosystem.

As far as the professional situation is concerned, women are the ones who make the most use of tools to reconcile work and family life, such as reduced working hours and career interruptions due to parental leave or other family needs. In this

scenario, it is important to clarify that by domestic tasks we refer to a variety of functions, including the organization of the home and the care of dependent people, e.g., children, the elderly, the disabled, and the sick. All these unpaid social functions are still performed by women in the vast majority of cases (Saleiro & Sales Oliveira, 2018). Portuguese women accumulate work—they spend almost as much time on their paid work as men do—with unpaid work.

This is a cultural issue. Society, including women, unconsciously reproduces what they have internalized in their socialization process. This reflects that there is still some resistance to a society that is aware of the emerging need to construct and/or reconstruct new social roles.

Traditional societal expectations say that women's priority, from the beginning, has been to carry out domestic tasks, which today are still the effects of an ancestral culture (Silva & Ferreira, 2023).

Nevertheless, a woman who is aware of her potentialities, of her "self," is much more than the tradition—already outdated—reserved for her. Economic independence should be the first victory of feminist issues. Although the independent woman, through her work, acquires the power to make her own decisions, to plan her future, to create ambitions, and to position herself in a wider social space, it's not only a unilateral behavior of women (Vieira, 2019a, 2019b). It is important to schematize habits in work organizations, in communities, in a structure that needs new ideas and new values, i.e., there is no creation of new symbolism without the affirmation of new positions that inspire effervescent collective behavior and that provoke a restructuring. Lumier (2008) adds that resistance to change is a "blind current."

However, women are widening their scope, and this is becoming increasingly visible. A paradigm shift is required, and with it, many other changes are needed to re-adjust.

Women are growing not only working for others, but also creating their own job, being entrepreneur and her own boss.

Today, entrepreneurship is an urgent issue at an economic, political, and social level. So, it's therefore important to first understand the phenomena in a global context. In this chapter, we'll review international contexts and international programs for women's entrepreneurship (GEM, 2023).

According to the latest report of the Global Entrepreneurship Monitor (GEM, 2023), women entrepreneurs tend to be younger on average than men, especially in low-income countries. Globally, women entrepreneurs tend to be better educated than men, with higher levels of tertiary education and lower levels of secondary education or less, especially in North America.

Women were also more likely than men to say they started a business because of a lack of jobs and to want to make a difference in the world.

In fact, according to the experts, job scarcity is the main reason why most entrepreneurs start a business, with almost three out of four women (72.9%) citing this reason for starting a business, compared to around two-thirds of men (67.2%).

This suggests that in most contexts, women start an entrepreneurial activity out of necessity and men out of opportunity.

The assessment of the BRICS countries (GEI, 2022) concludes that entrepreneurial attitudes are influenced by the cultural characteristics of a place. Using the Global Entrepreneurship Index (GEI, 2022) report as an instrument similar to the GEM, it is clear that there is more entrepreneurship motivated by necessity than by opportunity, and this is related to cultural factors reproduced by the natives of these regions, in addition to the existing structural paradigm.

Thus, it's found by this analysis, a clear need to move cultural issues and improve entrepreneurial tasks.

In order to move forward, the GEM (2023) proposes the following policy priorities for women's issues:

1. Support high-potential women entrepreneurs, especially those who start and grow with high innovation in multi-market businesses, especially in male-dominated industries.
2. Understand the importance of segmentation in designing effective support for women entrepreneurs. More analysis of gender differences within specific sectors and segments is needed to address gaps.
3. Support digitization costs and access for women entrepreneurs. Many entrepreneurs have been pushed to adopt new digital tools during the pandemic, with clear benefits for both sales and employment. In their reports, women entrepreneurs saw particularly important benefits from this global incentive to connect and engage virtually with customers and markets.
4. Celebrate the social and environmental sustainability impact of women-led enterprises. Sustainability is important to women entrepreneurs but can be more costly for entrepreneurs with small businesses, especially in highly regulated industries and markets.

It's observed that the global concern in empowering women to be confident and contribute to the task of entrepreneurship is relevant as they have a lot to give. But in any case, it does not depend only on them (women). It's a cultural issue.

Jardim (2020) argues that it is in the cultural roots of a people that their habits are found, and it is from this recognition that we can break structures and re-educate them culturally. In this scenario, the role of culture and education is essential to raise awareness, stimulate, trigger, and encourage entrepreneurship (Jardim, 2020). A polychronic dimension of culture (Hall, 2011), in gender issues, we pay attention to multiple objectives, that is, the integration of personal life and its contours, and the integration of professional life and the stereotypes that exist.

In this proposal, it's reflected that culture is transmitted by osmosis through people—as actors in the process—and is reinforced in the structure (government and territory) that will have the role of reflecting that same culture.

Considering the Portuguese statistical records (PORDATA, 2022), it is noted that if women are more numerous, they should also contribute more to the economy and take on more relevant social roles.

The Portuguese government introduced the "Gender Quota Law" (DL 62/2017). The law introduces a minimum gender quota of 33.3% for the administrative and supervisory bodies of public companies, starting in 2018. It also applies to listed

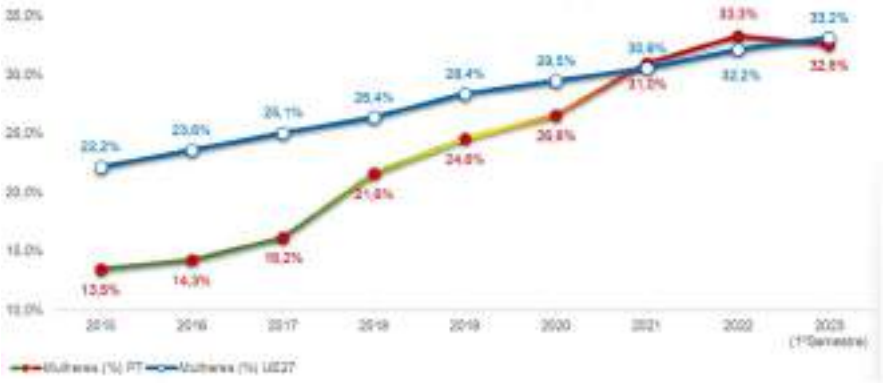

Fig. 1 CIG (2023). This figure represents the evolution of women in leadership positions in companies. The solid line corresponds to Europe, and the dashed line corresponds to Portugal

companies, which must have a minimum gender quota of 20% per gender from next year and 33.3% from 2020. The law also states that if a company fails to meet the quotas, a document will be published on the websites of the Commission for Equality in Labour and Employment and the Securities Market Commission, reprimanding the offending company. The company has 90 days to rectify the situation.

But why hasn't the law been extended to 50% between men and women? According to the latest reports (CIG, 2023), women are close to achieving good results.

The presence of women on the boards of directors of the largest listed companies, both in the EU27 and in Portugal, has registered a constant positive evolution, with the presence of women on the boards of directors of PSI 20 companies in 2022 (Fig. 1) already exceeding the EU average (in the group of 27) by 1pp. 1pp; although data from the first half of 2023 show a reversal of the trend, the very significant evolution of the feminization rate of the board of directors in Portugal, which went from 16.2% in 2017 to 33.3% in 2022, may reflect the adjustments made by companies after the approval of the gender quota law (CIG, 2023). So it's a good step to go further in this matter.

The role of universities is fundamental in monitoring the effectiveness of public policies that promote the development of society through the phenomenon of entrepreneurship.

Recent literature deepens these concerns by highlighting post-pandemic trends and the evolution of public and private programs. Elam et al. (2021) report that women entrepreneurs showed a higher capacity for adaptation in the use of digital tools, while OECD (2021) suggests that inclusive policy design remains a gap in most member countries. Moreover, Brush et al. (2022) emphasize the importance of high-potential programs tailored to different business segments and sectors, especially in male-dominated areas.

3 Research Method

In this chapter, it's a qualitative approach and analysis from the consulted references and the empirical research. The basic points were:

1. If women have to double their work activity in being entrepreneur and in home and/or family issues.
2. When women feel less credible in their work.
3. If women trust themselves and if they are confident.
4. If women entrepreneurs had backgrounds (educational experiences) since childhood.

Above the literature research to analyze this point it was done 80 interviews with entrepreneurial women in the Portuguese territory.

In the field of sociology, it finds a wide field of methods and techniques to work on a study problem. As methods, it defines the set of operational processes that allow the collection in research, and the choice of methods must be in line with the theories developed within the framework of the study. As methods, it is possible to distinguish between quantitative and qualitative methods (Schmitter, 2008; Quivy & Van Campenhoudt, 2008).

In this chapter, the qualitative approach is prioritized in order to compare the results of different authors and, of course, with the empirical elements.

The basis of this model is to uncover the importance of gender in the concept of entrepreneurship, as we have alluded to throughout the rhetoric exposed in the work.

With the intention of going deeper into the dimensions of the profiles related to life paths, motivations, and particular experiences, and following the qualitative approach, we will focus on the details, the differences, the particularities of each entrepreneur, with the voice of each woman taking pride of place in her own path and entrepreneurship (Guerra, 2014; Silverman, 2013). It is also important to clarify that we start from the premise of rational choice, working from the four stages already listed here: intentionality, rationality, the distinction between risk and uncertainty, and the distinction between strategic action and interdependent action (Weber, 2010).

The technique used in the empirical collection was the semi-structured interview, consisting of eight closed questions (biographical, e.g., age group, place of birth, sector of activity, turnover, location, years of activity, legal form, whether it generates employment) and 31 open questions seeking answers to the dimensions listed. The researcher's attitude was one of empirical observation, applied personally and individually in the workplace of the interviewee, with all the limitations that this entails. It could not be neglected in order to clarify the results obtained.

4 Empirical Results

Eighty interviews with women entrepreneurs were collected.

The issue of time management is strongly conditioned by the biographies of the interviewees: whether they live alone or in a relationship, whether they have sons and daughters or not, and whether they are minors or already independent. Fifty-eight of these women are married, as is the majority, and 65 have sons or daughters, some of whom are already of age. The mode for the number of offspring is two. In this context, it is important to note that we find two entrepreneurs with four sons or daughters (Fig. 2). In our view, this biographical situation underlines the versatility of these women, not only because having children means more work, but above all because the sector in which they work requires responsibility and greater time availability. All these elements affect the daily organization of these women's time (Vieira, 2019a, 2019b).

This was also the case in the bibliography reviewed.

On the question of their credibility in the workplace, we found cases of multiple discrimination, or on the basis of age or nationality, which in our opinion makes it possible to forget the issues of gender emancipation focused on women. More than 90% of the interviewees said that they felt discredited (Fig. 3), "especially with workers in the construction and real estate sectors, as they are not used to having a

	Sim, menores	Sim, só maiores	Não
PT Barlav	10	5	2
PT Sotav	12	7	4
I Barlav	12	7	4
I Sotav	5	7	5

Fig. 2 Vieira (2019a, 2019b). This figure represents the distribution of answers from 80 interviews conducted in the Algarve regarding whether women entrepreneurs had children at a younger age or not, including respondents who do not have children. The categories originally distinguished by color are now represented by different *patterns*: – *Diagonal stripes*: Portuguese women entrepreneurs living in the windward region. – *Horizontal stripes*: Portuguese women entrepreneurs living in the leeward region. – *Dotted pattern*: Immigrant women entrepreneurs living in the windward region. – *Cross-hatched pattern*: Immigrant women entrepreneurs living in the leeward region

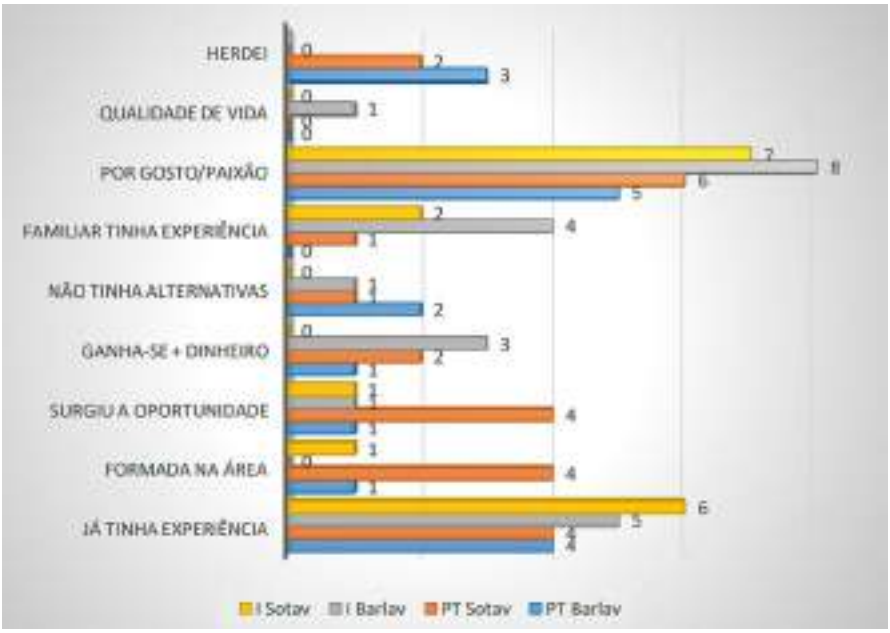

Fig. 3 Vieira (2019a, 2019b). This represents the different answers about the motives to being entrepreneur from top to bottom: it was an inheritance; looking for quality life; for being passioned in the activity; because of family experience; because had no other choice; because it wins more money; because appears this opportunity; because already academic skills in the area; because already had own experience

woman in charge" [sic passim]; in the legal profession, one adds: "*I feel that the 'male' lawyer is more privileged (…) But when I took the course, there were 400 women and 100 men*" [sic passim], a statement that contrasts the discrepancy between qualifications and positions held, in terms of gender, with more female graduates.

The question of trust aims to identify praxeological causes, often culturally transmitted by ancestors, through family and social habits, based on the ontology of the interviewees. In the debate, we confront women's own self-confidence, as well as their self-awareness of their potential, their autonomy in decision-making processes, and their ability to see opportunities and take advantage of them. Around 45% of respondents lack confidence and are afraid to take risks when they don't know if it will work (Fig. 3). Fear of taking risks, of giving themselves.

Without prejudice to the above, the majority of respondents point to attitudes, measured and reflected choices, as the only responsibility for their decisions, in accordance with the postulate of the theory of rational choice (Weber, 2010; Scheeffer, 2013).

Awareness of their empowerment catalyzes a change in mentality and can blur the clichés that still prevail about women's identity and roles, as well as promoting

awareness of potentialities that therefore favor the strengthening of agency, the use of transversal skills and an attitude of action.

There is a need to break down stereotypes, especially among women themselves.

On the last question, whether these entrepreneurs had some educational background, in childhood, given by their family or friends, or even their context of life.

It is important to understand the experiences of these women in order to understand their choices and options. In the analysis of the empirical collection, it is verified that the first cognitive constructs that these women had based on entrepreneurship were the result of social interactions experienced, whether in the context of family, school, and community. In this research, it was considered relevant to identify the informal learning, the ontological reserves that persist in the interviewees, the accumulation of knowledge developed throughout life and which, as a whole, are relevant to the construction of their entrepreneurial profile of the entrepreneur. Of the 80 women interviewed, 57 identified their action directly with the osmosis of knowledge transmitted from childhood (Fig. 3), experiences lived and accumulated from a young age, that is, directly from their family members.

It is important to add that the interviewees revealed that their motivations were never linked to the childhood experiences that gave rise to their life choices, but only to the possibility that they had acquired skills to undertake at the time of the interview, through the experiences observed in their family and social environment. In other words, the learning was in their subconscious.

It is also relevant to observe their perception when it was asked whether women are more entrepreneurial than men. In the review of the literature, it is reflected that it's impossible to define because they are not in the same conditions and challenges. But about the answers collected, most of them (80%) say yes, just because they have to be more flexible, multitask and that is more creative in the market. For other point, they don't have the same timeless than men to create, to innovate, nor the same credibility on the financial markets, as it was reviewed by literature.

The motivations are real, so they define themselves as passionate about entrepreneurial tasks. There is no doubt that each person's life story influences their cognitive capacity for the world, their way of interacting socially, and solving problems. After collecting the empirical data, we found commonalities that bring each of the interviewees closer together, whether in terms of family, education, circle of friends, and other factors that contribute to human knowledge and entrepreneurial attitudes. We also became aware of the multiplicity of elements that convey the cognitive construction of the agents, between local and global involvements, between the connection of past and present experiences that can only be understood in an individual analysis, in the person-context relationship of each discourse.

5 Final Considerations

This chapter shows that women's paper still has a long way to go. Between the state of the art and the empirical results, it was collected knowledge to understand that development is done by equality of challenges, and Entrepreneurship is a phenomenon very human dependent, so it emerges the diversity of skills finding in women and men.

But why do we need to be an entrepreneur? According to the quoted authors, it is to do something different, to innovate our approach, to innovate our activities, and to develop the society (Jardim & Franco, 2019).

Most women have a difficult challenge because they have to cumulate work with domestic issues (children, food, house cleaning, others), so they have little time to do the same as men. But they do it, and they are needed. We need diversity to create innovation. We need diversity of perspectives, not only in terms of gender, but also in terms of territories (different countries, different cultures, different policies) and, very importantly, in terms of different levels of education. Think global, act local (Vieira & Sales Oliveira, 2016) is the key to the development of this subject.

Moreover, they (women) use to be more focused, stubborn and qualities such as creativity, affection, passion, adventure, authenticity, optimism, tenacity, proactivity, multitasking, flexibility, communicativeness, sensitivity, among others, fit into the corollary of diversity as a necessary element for the construction of the concept of entrepreneurship that values innovation, attitude and the difference in human character, but, pay attention, with a similar purpose in their behavior, i.e., The entrepreneur has an attitude to act, to create, to install value (economic, social, cultural) in society, so the focus on behavior is the key to entrepreneurship.

In terms of limitations, it's true that 80 testimonies do not in any way aggregate the entire entrepreneurial corpus in the region, so the field of entrepreneurial profiles can be closed. Furthermore, it is pointless to try to exhaust the delimitation of profiles in this study, given the very concept of human diversity that is aggregated as the basis of entrepreneurship.

However, these 80 testimonies are rich in content for future research, research on the subject. Learning does not end, and neither does the meaning of research on social movements.

Educational programs for the development of women entrepreneurs are healthy and necessary to produce better results in society (Jardim, 2020). The problem of education for entrepreneurship inevitably crosses the knowledge contained in transversal skills and the result of professional experience. Therefore, if public policies intend to promote entrepreneurial profiles in society, it is urgent to adapt new teaching models in academies, with a more incisive practical-pedagogical content, strengthened by storytelling (increasingly used by academics as a teaching tool (Berger & Quinney, 2005; Polletta et al., 2011) and enriched by mentoring. The importance of transversal skills in entrepreneurship is real, so it can be suggested that it is not books that change the world, it is people.

Nevertheless, this paper confirms that books change people, who in turn change the world. In terms of social issues, it is reasonable to state that women in the role of entrepreneurs enrich their social representation and contribute to the elimination of gender stereotypes.

It is undeniable that women have paved the way and are increasingly revealing a portfolio of skills that prove their potential. Society needs women in the labor market and men in the home. This is not an exchange of roles, but an acceptance of sharing roles in favor of social, political, and economic balance. Entrepreneurship deconstructs the meaning of gender and emphasizes human diversity.

In the scenario of globalization and in the face of the metamorphoses of the labor market and the instabilities that mark the elastic moment of our history, we assume that there is a constant need to attract new audiences and to create new products and services. The cultural mixing of territories favors this same need. In addition, the installation of human diversity of other nationalities, ages, and genders is a beneficial reality (GEM, 2023; GEI, 2022) and contributes to boosting the economy (Amin, 2020; Henry et al., 2020; SIGI, 2017, Un Women, 2022). In this approach, it is salutary to conclude that the use of women's potential will lead to the emergence of new practices and, consequently, new paradigms, which will also strengthen the scientific fabric of the social sciences that study population movements and their effects.

The COVID-19 pandemic acted as a global disruptor, not only in economic terms but also in the reconfiguration of gender roles, social expectations, and workplace dynamics. The prolonged periods of confinement, the rise of remote work, and the collapse of certain industries disproportionately affected women, especially those in caregiving roles. However, it also accelerated a cultural shift toward more inclusive and flexible forms of economic participation.

Post-pandemic, women have increasingly occupied the entrepreneurial space as a strategic response to job insecurity and as a means of reclaiming autonomy. This phenomenon is not merely economic but deeply cultural, reflecting a transformation in how women perceive their role in society and how society perceives their capacity for innovation and leadership (Marchetti & Veronese, 2023).

In particular, the normalization of digital tools and virtual engagement has lowered entry barriers for many aspiring female entrepreneurs. It has also highlighted the urgency of creating support systems that reflect new realities: hybrid work models, shared parenting responsibilities, and diversified leadership styles. These changes represent a window of opportunity to dismantle outdated stereotypes and establish a new entrepreneurial culture—one that embraces diversity, values emotional intelligence, and promotes collaborative growth.

Thus, cultural change after COVID-19 is not a peripheral factor but a central element in redefining entrepreneurship itself. For women's entrepreneurship to thrive, it is essential that these cultural evolutions are recognized, supported, and institutionalized through inclusive policies, educational reform, and public discourse.

Education plays a foundational role in shaping entrepreneurial identity, particularly for women, who often face structural and cultural barriers to access, credibility, and self-confidence. Universities, as key institutions of knowledge production and social transformation, are not merely spaces for technical training but also

critical environments for developing transversal competencies such as critical thinking, resilience, creativity, and leadership—all essential for entrepreneurship.

In this context, the role of higher education institutions must evolve beyond traditional curricular delivery. They must serve as catalysts for inclusive innovation by embedding gender-responsive entrepreneurship education across disciplines. This includes the creation of incubators and mentorship programs specifically tailored to women, the integration of real-world entrepreneurial challenges into coursework, and the promotion of intergenerational and peer-led learning experiences.

Furthermore, academic environments must challenge and deconstruct internalized stereotypes through representation, discourse, and policy. Female students must see themselves reflected not only in the curriculum but also in their professors, role models, and institutional leadership. Entrepreneurial education, when grounded in equity, becomes a powerful tool for shifting mindsets and enabling long-term cultural change.

Universities also have a crucial role in producing data and assessing the impact of public and private entrepreneurship programs. As Marchetti and Veronese (2023) note, post-pandemic education must be increasingly flexible, interdisciplinary, and socially engaged to respond to the complex realities of gendered entrepreneurship.

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Financial Literacy Programs

António Eduardo Martins and Carlos Rafael Branco

Abstract The critical importance of financial literacy has been magnified in the aftermath of the 2008 financial crisis, highlighting its necessity for individual and societal economic stability. This chapter discusses the significant role of financial literacy in empowering individuals to make informed financial decisions and in promoting broader economic prosperity. It explores various dimensions of financial literacy, including its impact on entrepreneurs, its integration into formal education, and the creation of national strategies for financial education. The chapter also evaluates the effectiveness of these educational programs through global and national perspectives, considering the challenges and opportunities presented by digital innovations and socio-economic disparities. Through a detailed literature review and analysis, the paper underlines the foundational role of financial literacy in fostering economic resilience and social mobility, and the necessity of continuous adaptation to changing financial landscapes.

Keywords Financial literacy · Financial education · Entrepreneurs · Entrepreneurship

1 Introduction

The aftermath of the 2008 financial crisis underscored the significance of financial literacy, showcasing how education serves as a cornerstone for economic stability. Equipping individuals with the necessary knowledge and skills empowers them to

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J. Jardim (ed.), *Entrepreneurial Education in a Global and Digital World*, Studies on Entrepreneurship, Structural Change and Industrial Dynamics,
https://doi.org/10.1007/978-3-032-17008-8_6

adeptly handle their financial resources, thereby reinforcing their financial well-being.

Financial literacy has been recognized at a global level as a core life skill in the twenty-first century, one that is essential for the empowerment of individuals and for supporting individual and societies' financial well-being (G20, 2021).

Other recent developments in the financial area, including a growing interest in the use of crypto-assets, new and alternative forms of financial advice (e.g., finfluencers), and the increased incidence and complexity of financial frauds and scams, also highlight the need to strengthen financial literacy skills among adults to help them make sound financial decisions (OECD, 2023).

The Surveys on Financial Literacy reveal that citizens exhibit a comparatively modest grasp of financial concepts, highlighting a direct link between robust financial literacy and factors such as income, education level, and inclination toward overestimating one's knowledge. Meanwhile, entrepreneurship has steadily asserted its presence within the business landscape, assuming a pivotal position in the nation's commercial ecosystem, particularly within the technology sector.

Due to this, the European Commission has recognized the importance of creating a national literacy strategy by all state members (Bruegel, 2024).

Nowadays, financial literacy has been brought to discussion by many authors and has been the subject of various studies, mostly after the end of the subprime crisis that brought this important issue to all countries. The objective of these studies is to find out the financial literacy level of entrepreneurs and discover if there are any characteristics that can lead to them developing their level of financial literacy.

Financial literacy isn't just a personal skill; it's a fundamental aspect of a healthy and thriving society. In an increasingly complex financial area, where decisions about money impact every aspect of our lives, from education to healthcare, understanding financial concepts is essential for individuals to navigate successfully (OECD, 2015). This essay will explore the importance of financial literacy in society, its impact on individuals and communities, and strategies for promoting greater financial education.

At its core, financial literacy refers to the knowledge and skills needed to make informed financial decisions. It encompasses understanding concepts such as budgeting, saving, investing, borrowing, and managing risk. In today's world, where personal finance decisions have far-reaching consequences, financial literacy is more important than ever.

One of the key benefits of financial literacy is the ability to empower individuals to take control of their financial futures. When people understand how to manage their money effectively, they are better equipped to achieve their financial goals, whether it's buying a home, saving for retirement, or starting a business (Leary, 2017). Financially literate individuals are also less vulnerable to financial crises and are better prepared to weather economic downturns.

Moreover, financial literacy has broader societal implications. A population that is financially literate is more likely to contribute to economic growth and stability. When individuals make sound financial decisions, they are more likely to invest in their education, start businesses, and contribute to their communities. This, in turn,

can lead to higher levels of employment, increased productivity, and overall economic prosperity.

Financial literacy also plays a crucial role in promoting social mobility and reducing inequality. Access to financial education can empower marginalized communities to break the cycle of poverty and build wealth over time. By equipping individuals with the knowledge and skills they need to make informed financial decisions, we can create a more equitable society where everyone has the opportunity to succeed.

However, despite its importance, financial literacy remains a challenge for many people. Studies have shown that a significant portion of the population lacks basic financial knowledge, which can have serious consequences for individuals and society as a whole. Without the necessary skills to manage their money effectively, individuals may fall prey to predatory lending practices, accumulate high levels of debt, or struggle to save for the future.

Furthermore, the complexity of the financial system can make it difficult for individuals to navigate. From understanding different types of loans to deciphering investment options, the sheer volume of financial information can be overwhelming for many people. This underscores the need for comprehensive and accessible financial education programs that can equip individuals with the skills and knowledge they need to succeed in today's economy.

Fortunately, there are steps that can be taken to promote greater financial literacy in society. One approach is to integrate financial education into school curricula from an early age. By teaching children about basic financial concepts such as budgeting, saving, and investing, we can instil good financial habits early on and lay the foundation for lifelong financial success.

In addition to formal education, there are also many resources available to help individuals improve their financial literacy. From online courses to workshops and seminars, there are a variety of ways for people to learn about personal finance and improve their financial skills. Employers can also play a role by offering financial wellness programs as part of their employee benefits packages.

Furthermore, governments and policymakers have an important role in promoting financial literacy at the societal level. By investing in financial education initiatives and supporting programs that increase access to financial services, policymakers can help ensure that everyone could build a secure financial future.

In conclusion, financial literacy is a critical skill that is essential for individuals and society. By empowering people to make informed financial decisions, we can promote economic growth, reduce inequality, and create a more equitable society. By investing in financial education and promoting greater access to financial services, we can help build a brighter future for generations to come.

It's very important to perceive the level of literacy of entrepreneurs. When these entrepreneurs start building their own company, they should have a lot of financial knowledge to support management issues. To start their business, entrepreneurs resort to external assistance mainly in the areas of accounting, financial, and they search for support on developing a business plan. During business development,

entrepreneurs continue using external assistance in accounting, commercial, marketing, and finance.

Financial literacy plays a crucial role in entrepreneurship. Understanding financial concepts like budgeting, cash flow management, investment, and risk assessment can make or break a business venture. Entrepreneurs with strong financial literacy are better equipped to make informed decisions, manage resources effectively, and navigate the complexities of running a business. Moreover, financial literacy empowers entrepreneurs to secure funding, negotiate deals, and plan for long-term sustainability. In today's competitive business area, being financially savvy is not just an advantage; it's a necessity for entrepreneurial success.

2 Literature Review

As a result of the digital era and an increasingly global environment, the world population has been changing their consumption habits. Nowadays, access to products and services is easier and faster, which leads to greater impulsiveness when purchasing (Theodora & Marti'ah, 2016). Education and literacy are, therefore, essential to human development and as tools that allow more conscious decision-making, based on a greater amount of information.

The topic of financial literacy has received increasing attention from various entities, such as governments and international organizations, with the general level of financial literacy among populations being lower than desirable. The 2008 financial crisis raised awareness of the need to educate individuals financially and provide them with tools that allow them to have a financially stable life (Geddes & Steen, 2016; Sucuahi, 2013).

The Organization for Economic Co-operation and Development (OECD) defines financial literacy as "the process by which financial consumers/investors improve their understanding of financial products and concepts and, through information, instruction and/or objective advice, develop the skills and confidence to become more aware of financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being" (OECD/INFE, 2015a).

The concept of financial literacy translates into the acquisition of knowledge and skills that allow individuals to deal with financial issues associated with day-to-day life, making conscious decisions suited to their needs and enabling effective management of their financial resources (Klapper et al., 2016; Oseifuah, 2010; Trunk & Dermol, 2015), covering areas such as knowledge and understanding of financial products, planning and budgeting, savings, investment and debt and risk management (Avlijas et al., 2014; Lusardi & Mitchell, 2013; Singhry & Bogoro, 2016).

A good level of financial literacy benefits both the individual and society, promoting economic stability and development (Borg, 2017).

It is commonly considered that the appropriate management of personal finances has direct benefits on individuals, but the judicious choice of financial products also contributes to the stability of the financial system.

The increasing complexity of the banking system generates greater anxiety among consumers, as some of them still have difficulty understanding the financial products available and, consequently, using them (Borg, 2017; Orton, 2007), where the variety of products and savings and credit mechanisms reinforce the importance of individuals having the necessary knowledge to analyze the available options (OECD, 2006).

Adherence to digital channels, such as home banking, allowed users easier access to financial products made available by various banking entities.

However, despite the benefits, it is necessary to consider the risks associated with the security of technological systems, present in everyday life, and the possibility of making financial decisions in a short space of time, without adequate consideration of the respective consequences.

Before "purchasing" a financial product, it is necessary to know its characteristics. There is also an increase in sources of financial insecurity, resulting from labor instability and the aging of the population. Financial literacy presents itself, in this aspect, as a key tool to guarantee the security and stability of families and individuals in the medium and long term, making them aware of the risks and consequences of bad financial decisions.

Several studies support that it is possible to learn and acquire a good level of financial literacy (Leifels & Metzger, 2015). Financial education should be sought by everyone, not just investors or financial experts, and may even be of greater importance for families. This is beneficial to any individual, regardless of age or income level (OECD, 2006; Trunk & Dermol, 2015).

Improving financial literacy is also positive for the market and economy, being responsible for more informed consumers and capable of achieving greater purchasing power, promoting competitiveness and innovation (Krechovska, 2015; Orton, 2007).

Recognizing that the importance of literacy and financial independence must be part of the reality of all individuals from a young age, the OECD (2006) argues that financial education must be part of the school curriculum, adapting learning to the age of each student and developing the different aspects of financial life gradually throughout the academic career. This must also be instilled within the family, and it is essential that other family members know how to set a positive example. Financial habits are developed mainly in the transition to adult life and are later more difficult to reverse if they are negative. This then proves to be a crucial period for reinforcing learning and habits with positive effects in the short, medium, and long term (Lusardi, 2013; Theodora & Marti'ah, 2016).

OECD began its financial education project in 2003 to respond to the interest of different countries in improving the level of financial literacy of their inhabitants, resulting from changes at economic, political, demographic, and financial market levels. At an institutional level, financial and banking entities must also promote financial education, distancing this initiative from its commercial aspect, without

resorting to marketing or sales strategies associated with any product or service (OECD, 2006).

The growing involvement of individuals in the financial market is notable, combined with the greater offer of products, with a greater individual intention to be mainly responsible for their financial health and well-being (Van Rooij et al., 2011).

On the other hand, market participation and the number of products purchased are related to each individual's level of financial literacy, which is more active the higher the level of literacy (Lusardi & Mitchell, 2013). The level of financial literacy varies with age, income level, education, and employment status (Lusardi & Mitchell, 2013).

The Standard & Poor's Ratings Services Global Financial Literacy Survey is the world's largest, most comprehensive global measurement of financial literacy covering 148 countries and more than 150,000 respondents. It probes knowledge of four basic financial concepts: risk diversification, inflation, numeracy, and interest compounding.

According to the methodology used in the study of Standard & Poor's, an individual is considered financially literate if they correctly answer the questions on at least three of the four topics presented. The study concluded that only one in every three individuals was financially literate, and there was also a higher incidence of financial illiteracy in female individuals (35% of men are considered financially literate versus 30% of women), with lower incomes and lower levels of education. The two themes that achieved the best results were Inflation, Numeracy (Interest).

When asked for a self-assessment, women are also more aware of their level of financial literacy (Klapper et al., 2016; Lusardi & Mitchell, 2013). A financially illiterate individual is generally guided by the advice of friends and family, tending to opt for financial products that they use, revealing themselves to be more dependent. The financially literate, on the other hand, turn to sources such as economic newspapers, financial advisors, and online research (Van Rooij et al., 2011). According to Lusardi (2013), an individual's behavior varies depending on their level of financial literacy.

In this sense, a financially literate individual will, presumably, have a greater ability to predict their future needs and take, in a timely manner, the necessary measures to meet them, such as creating savings. On the other hand, an individual with poor financial knowledge is more likely to incur expenses considered avoidable, such as costs arising from higher interest rates on loans taken out or fines for late payments. Ability to respond to unexpected situations and expenses is also reduced, as you will have greater difficulty saving and creating reserves, making you more vulnerable to this type of scenario (Klapper et al., 2016; Lusardi, 2013).

Savings tend to be more reactive, resulting from situations such as a reduction in income, rather than active, conscious, planned, and carried out on one's own initiative. Long-term planning is also often encouraged by negative experiences from friends and/or family (Van Rooij et al., 2011; Yong & Tan, 2017).

The level of financial literacy is positively related to management and planning capacity (Lusardi & Mitchell, 2013). Understanding the importance of managing their resources, individuals are more aware of their financial situation and the

measures to be taken to achieve greater savings and increase the value of their money through investment products suited to their risk profile and objectives.

Lack of planning, on the other hand, has negative consequences in terms of savings and investment, resulting in a lower volume of them (Lusardi & Mitchell, 2008; OECD, 2006).

As mentioned by Trunk and Dermol (2015), financial literacy influences the skills and attitudes of entrepreneurs. In a business environment that is unstable and in which it is necessary to be able to make decisions quickly, it is important for the entrepreneur to have good financial knowledge. This knowledge is also crucial in creating the business (for example, in preparing the business plan) and in its development, allowing, among others, to interpret the project's financial data and make strategic decisions based on this information. Individuals' sources of financial information are also related to their level of financial knowledge. According to Van Rooij et al. (2011), individuals with a better level of financial literacy search for information mainly in economic newspapers, through financial consultants or online research.

In their studies, Klapper et al. (2016) and Singhry and Bogoro (2016) report that an individual with a higher level of financial literacy is more likely to adopt an entrepreneurial attitude and create new businesses.

Financial education is therefore a constant learning process, which develops the human being's integral capacity to make decisions about many aspects of life, including those related to the issue of money to live well and in a balanced way (Olivieri, 2013).

According to Gitman (1997), financial planning "is an important aspect for the operation and sustainability of the company, as it provides roadmaps to direct, coordinate and control its actions in achieving its objectives."

It is important to bear in mind that the final objective of financial education is very broad, providing an improvement in the quality of life, in the present and in the future, intelligently achieving the defined objectives of the entrepreneur.

Financial literacy is a crucial skill for individuals to navigate the complexities of the modern world. In Portugal, higher education institutions have recognized the importance of incorporating financial literacy courses into their curricula to equip students with the knowledge and skills they need to make informed financial decisions.

Across Europe, where financial literacy is increasingly recognized as a vital skill for individuals to navigate the complexities of the modern world (EBA, 2020), higher education institutions are incorporating financial literacy courses into their courses to allow students to have more financial skills.

Some universities in Europe offer specialized courses or workshops on financial literacy as part of their continuing education programs. For example, the University of Zurich in Switzerland offers a course titled "Financial Literacy for Young Adults," which is open to community members who want to improve their financial knowledge. These courses cover topics such as budgeting, debt management, and financial planning, providing participants with practical tools and strategies to achieve their financial goals.

In Portugal, some universities also offer specialized courses or workshops on financial literacy as part of their continuing education programs. For example, the University of Porto offers a course titled "Financial Literacy for Adults," which is open to community members who want to improve their financial skills. These courses cover topics such as debt management, budgeting, and financial planning, providing participants with practical tools and strategies to achieve their financial goals.

In addition to traditional classroom-based instruction, technology is also playing a role in promoting financial literacy in higher education in Europe. Online platforms and mobile apps are being used to deliver financial education content to students in a convenient and accessible format. For example, Stockholm School of Economics in Sweden offers an online course on "Financial Literacy and Entrepreneurship," which allows students to learn at their own pace and from anywhere with an internet connection.

In Portugal, the University of Coimbra offers an online course on "Financial Literacy and Entrepreneurship," which allows students to learn at their own pace and from anywhere with an internet connection.

The inclusion of financial literacy courses in higher education programs in Europe, and particularly in Portugal, is significant for several reasons. First, it helps address the growing need for financial education in society. With increasing levels of debt, low levels of savings, and a lack of understanding about financial products and services, there is a clear demand for individuals who are knowledgeable about personal finance, and with the incorporation of financial literacy into higher education curricula, universities are helping to fill this gap and equipping students with the skills they need to succeed in the real world.

Second, financial literacy courses in higher education programs can help promote social mobility and reduce inequality, because they provide students from diverse backgrounds with the knowledge and skills they need to manage their finances effectively. Universities can empower them to make informed decisions about their financial futures. This, in turn, can help disrupt the cycle of poverty and create opportunities for upward mobility.

Finally, incorporating financial literacy into higher education curricula can help foster a culture of financial responsibility and sustainability. By teaching students about the importance of financial planning, budgeting, and saving, universities are promoting habits that can lead to long-term financial well-being. Moreover, by educating future leaders and decision-makers about the impact of their financial choices on individuals, communities, and the environment, higher education institutions can contribute to a more sustainable and equitable society.

The inclusion of financial literacy courses in higher education programs outside of Europe, and particularly in Portugal, is a positive development that benefits students, society, and the global economy. By equipping students with the knowledge and skills they need to make informed financial decisions, universities are helping to address the growing need for financial education and promote social mobility, equality, and sustainability worldwide. As the importance of financial literacy

continues to grow, it is essential that higher education institutions across the globe continue to prioritize and expand their efforts in this area.

In conclusion, financial literacy is a critical skill that has far-reaching implications for individual and societal well-being. From personal finance management to economic stability and social mobility, financial literacy plays a central role in shaping the financial health and resilience of individuals and communities. By addressing the pervasive lack of financial knowledge and skills through targeted interventions and collaborations between stakeholders, we can empower individuals to make informed financial decisions and build a more equitable and prosperous society.

3 Financial Literacy Programs

Financial literacy programs encompass a broad array of initiatives aimed at enhancing individuals' understanding of financial concepts and practices. These programs target diverse demographics, ranging from schoolchildren to adults, and cover a wide spectrum of topics including budgeting, saving, investing, debt management, retirement planning, and risk management. By equipping individuals with the knowledge and skills necessary to manage their finances, these programs aim to foster financial independence and resilience.

To create a powerful national strategy for financial education, several key pieces need to be carefully planned. These include what will be taught (curriculum), how it will be delivered (delivery mechanisms), who will be involved (stakeholder engagement), and how well it's working (evaluation frameworks).

At the heart of financial literacy programs lies education. By integrating financial education into school curricula from an early age, these programs lay the foundation for sound financial decision-making. The design of the curriculum should be informed by the needs, preferences, and cultural context of the target audience, as well as the overarching goals of the initiative.

In addition to developing a robust curriculum, it is essential to consider how the curriculum will be delivered to learners. The choice of delivery mechanisms depends on various factors, including the target audience, infrastructure constraints, and resource availability. Common delivery mechanisms for financial education include formal education systems, nonformal education programs, digital and mobile platforms, workplace initiatives, and financial institutions.

Formal education systems integrate financial literacy into school curricula from an early age. Nonformal education programs offer financial literacy workshops, seminars, and community-based outreach initiatives targeting adults, seniors, migrants, and other underserved groups. Digital and mobile platforms harness the power of technology to deliver financial education content through online courses, mobile applications, and social media platforms. Workplace initiatives involve partnering with employers to provide financial education and wellness programs to employees. Financial institutions collaborate with banks, credit unions, and microfinance institutions to embed financial education into their products and services.

Effective stakeholder engagement is essential for gaining support, building consensus, and mobilizing resources in support of initiatives. Key stakeholders in the financial education ecosystem include government agencies, educational institutions, financial regulators, civil society organizations, and financial service providers.

Finally, it is essential to establish robust mechanisms for evaluating the effectiveness and impact of financial education initiatives. Evaluation serves multiple purposes, including assessing learning outcomes, monitoring program implementation, identifying areas for improvement, demonstrating return on investment, and informing policy and practice.

3.1 OECD Policy Recommendations and Guidelines

The Organisation for Economic Co-operation and Development (OECD) stands as a key player in promoting economic progress and well-being among member and partner countries. One area where the OECD has made significant contributions is in advancing financial literacy programs.

One of the OECD's contributions is conducting comprehensive research and data analysis on financial literacy. Through surveys, studies, and reports, the organization assesses the levels of financial literacy among populations across member and partner countries. By synthesizing international experiences and case studies, the OECD collects key lessons and principles that can guide policymakers and stakeholders in designing effective financial literacy programs.

The OECD has developed a framework of core competencies for financial literacy, outlining the knowledge, skills, and attitudes that individuals need to manage their finances effectively. The core competencies framework serves as a foundation for designing curriculum standards, assessment tools, and teacher training programs in financial education. These competencies encompass areas such as money management, financial planning, and credit and debt management, investing and wealth building, and consumer rights and responsibilities.

The OECD has compiled a set of good practices in financial education based on international experiences and evidence. These good practices cover various aspects of financial education, including curriculum development, teacher training, stakeholder engagement, and evaluation and impact assessment.

According to OECD/INFE (2012a, 2012b), a national strategy for financial education is defined as "a nationally co-ordinated approach to financial education that consists of an adapted framework or programme, which (i) recognises the importance of financial education and defines its meaning and scope at the national level in relation to identified national needs and gaps, (ii) involves the cooperation of different stakeholders as well as the identification of a national leader or co-ordinating body/council, (iii) establishes a roadmap to achieve specific and predetermined objectives within a set period of time; and, (iv) provides guidance to be

applied by individual programmes in order to efficiently and appropriately contribute to the national strategy."

The following details on the key features of a national strategy for financial education are mostly derived from the cited document *High-level Principles on National Strategies for Financial Education* (OECD/INFE, 2012a).

The process of developing a national strategy is crucial for increasing awareness of financial literacy issues at a national level, fostering trust among stakeholders, determining effective coordination methods, and ensuring relevance. Additionally, it plays a key role in identifying a leading authority for the strategy and establishing coordination mechanisms for implementation.

The national strategy framework should include a customized roadmap with a comprehensive vision across sectors, realistic and measurable objectives, relevant policy priorities, and target audiences. This roadmap should be flexible and regularly reassessed to adapt to the dynamic national context, including political factors.

The development of a national strategy involves various stages, including assessment, mapping, consultation, and raising national awareness through communication efforts.

During the preparatory phase, it's essential to assess existing financial education initiatives by public, private, and civil society stakeholders, review relevant research and international practices, and evaluate the financial literacy needs of the population and policy gaps. Establishing mechanisms for consultation and coordination among stakeholders is also crucial at this stage. Communicating the results of the preparatory phase and officially announcing the launch and development of the national strategy to relevant stakeholders and the public is essential. Ideally, the national strategy should be initiated, developed, and overseen by a credible and impartial authority or governing body, with recognition and support at the highest policy level. Sufficient resources and enforcement powers should be allocated to ensure effective implementation of a sustainable and efficient strategy tailored to national needs.

Given the increasing importance of digital financial services, the OECD/INFE has formulated guidelines for digital financial literacy, notably Guidance on Digital Delivery of Financial Education (OECD/INFE, 2022). The Guidance was developed to assist policy makers in deciding when to adopt digital delivery, and how to effectively design and implement digital financial education initiatives. I. They cover key areas such as digital payment systems, various payment methods, online security against fraud and scams, and privacy and data protection.

4 Evaluation and Monitoring of Financial Literacy Programs

It is essential to establish robust mechanisms for evaluating the effectiveness and impact of financial education initiatives. Evaluation serves multiple purposes, including assessing learning outcomes, monitoring program implementation, identifying areas for improvement, soliciting feedback to identify strengths, weaknesses, and opportunities for enhancement.

Starting in 2011, the OECD International Network on Financial Education (OECD/INFE) is made up of members from over 130 economies and overseen by an Advisory Board. It currently has three working groups addressing key policy areas related to financial education: (1) Standard setting and, implementation, (2) evaluation, monitoring and impact; (3) Financial education.

Within the OECD/INFE work on national strategies, there are useful elements to support more systematic work on the evaluation of national strategies. These elements have been collected in the *Recommendation of the Council on Financial Literacy*, adopted by the OECD Council on 29 October 2020, and the *Policy Handbook of National Strategies for Financial Education* (OECD/INFE, 2015a, 2015b), along with various case studies developed from a survey of OECD/INFE members.

The 2012 OECD/INFE *High-level Principles on the Evaluation of Financial Education* Programmes defines a set of principles and actions for effective evaluation and monitoring of financial literacy and education programs. The *High-level Principles* also highlight the importance of having a strategic approach to financial literacy and education with defined objectives, and of identifying ways of assessing the impact of the strategy (OECD/INFE, 2012a).

This *High-Level Principles* foresees a distinction between monitoring—a process of regular tracking of the implementation process—and evaluation—the comprehensive process of understanding how the national strategy has advanced toward its objectives.

A crucial aspect of the evaluation process involves monitoring the implementation of the strategy. Typically, this entails devising indicators or trackers to monitor various elements of the strategy's execution, such as its reach, implementation procedures, and allocation of time and resources.

The evaluation itself is often a comprehensive and intricate process, combining both regular and one-time activities, as well as employing a variety of assessment methods. Primary instruments used to quantitatively assess progress and outcomes of national strategies include repeated waves of financial literacy surveys or household surveys, along with secondary data analysis. These methodologies enable public authorities to monitor progress on a broad scale across the population and to observe shifts among specific target demographics. Additionally, other quantitative tools such as high-frequency financial literacy indicators or trackers are utilized. These tools differ from those used for monitoring, as they focus on tracking the

evolution of financial literacy and behavioral variables over time, rather than solely assessing consumer reach and implementation progress.

OECD/INFE (2010) provided the foundation guidance on the evaluation of Financial Education Programmes. Eight Principles are there considered: (1) Plan your evaluation, (2) Consider other cultural perspectives, (3) Think about the cost, (4) Make sure your evaluation is fair, reflective and, preferably, independent, (5) Choose the right evaluation method, (6) Put your evaluation into place, (7) Communicate your results appropriately. The last principle is devoted to the evaluation report, where it is recommended to describe the evaluation method in detail and to state any limitations of the findings and threats to their validity. It also provided guidance on the three key steps of the evaluation cycle, comprising the following steps: (a) Planning your evaluation, (b) Implementing your evaluation, and (c) Reporting and using evaluation findings. Guidance is also provided on the methods to carry out an evaluation. Seven methods are considered: Focus groups, Key informant interviews, Assessment information, Observations, Surveys, Administrative information, and Diaries.

According to OECD's report *Evaluation of National Strategies for Financial Literacy* (OECD, 2022), an evaluation of a national strategy typically involves four main components:

(i) Institutional Coordination Assessment: This component examines the governance structure of the national strategy, including stakeholder roles and responsibilities, communication channels, and knowledge-sharing practices. It also evaluates the strategy's efficiency in avoiding redundancy and ensuring resource optimization.
(ii) Program Evaluation: This component focuses on reviewing all programs conducted under the national strategy, analyzing their impact collectively, and assessing any available evidence of their effectiveness.
(iii) Process Implementation Analysis: This component involves evaluating the methods used to deliver programs and their suitability for specific target groups. It also assesses the effectiveness of implementation approaches, such as direct financial education provision or support for stakeholders in program delivery.
(iv) Progress Measurement: Quantitative data, such as national financial literacy surveys or monitoring indicators, provide core evidence of overall progress. Additionally, qualitative data from stakeholder interviews and consumer focus groups offer nuanced insights into implementation challenges and issues.

In crafting the evaluation plan for the national strategy, involving external evaluators can facilitate the alignment of the strategy's objectives with data collection and research tasks. During the execution of the evaluation plan, a participatory approach is employed, ensuring clear definition and encouragement of stakeholder involvement. This process emphasizes collaboration not only with stakeholders but also with the broader financial literacy community within the relevant jurisdiction and often extends to the international community.

There's an acknowledgment that assessing a comprehensive national strategy extends to evaluating its governance structure. Selecting an appropriate governance model can be challenging, sometimes predetermined by existing institutional frameworks rather than being a deliberate choice. Additionally, not every country and its national strategy can adopt the same governance model. Consequently, evaluating the governance structure and its features may encounter political sensitivity and institutional resistance. Nonetheless, coordinators have experimented with various communication methods to engage stakeholders.

To ensure objectivity and transparency in the evaluation process, ideally, evaluators should be entirely independent from both the coordination and implementation phases of the national strategy. However, they should possess a thorough understanding of the strategy's objectives, implementation approaches, and potential challenges, but balancing independence with comprehensive knowledge of the implementation process can be challenging to achieve.

In 2022, the OECD published the joint EU/OECD financial competence framework for adults (EU/OECD, 2022). This framework aims to improve individuals' financial skills so that they can make sound decisions regarding their personal finances. It supports the development of public policies, financial literacy programs and educational materials by Member States, educational institutions, and industry.

4.1 The Role of PISA in Assessing Financial Literacy

The Programme for International Student Assessment (PISA) plays a crucial role in promoting financial literacy on a global scale. Conceived by the OECD, PISA evaluates the competencies of 15-year-old students in reading, mathematics, science, and, crucially, financial literacy. The assessment, conducted triennially, provides policymakers, educators, and stakeholders with invaluable insights into the financial literacy levels of young people across participating countries and economies.

One of the key strengths of the PISA assessment is its comprehensive approach to measuring financial literacy. Rather than focusing solely on theoretical knowledge, PISA evaluates students' ability to apply financial concepts in real-life contexts. This includes tasks related to financial planning, budgeting, understanding financial products, and making informed decisions about financial issues. By assessing both knowledge and application, PISA offers a holistic view of students' financial capabilities, reflecting the multifaceted nature of financial literacy.

PISA 2022 Assessment and Analytical Framework presents the conceptual foundations, now in its eighth cycle of comprehensive international surveys of student knowledge and skills that are essential for full participation in modern societies. It includes *the frameworks for assessing mathematics, financial literacy and creative thinking. These chapters outline the content knowledge and skills that students need to acquire in each domain, how each domain is assessed, and the contexts in which this knowledge and these skills are applied* (PISA, 2022a, 2022b).

Moreover, the international scope of the PISA assessment allows for meaningful comparisons across countries and economies. By benchmarking financial literacy levels on a global scale, PISA enables policymakers to identify trends, best practices, and areas for improvement. This comparative perspective is invaluable for informing evidence-based policies and interventions aimed at enhancing financial education and literacy outcomes worldwide.

First and foremost, PISA results shed light on the strengths and weaknesses of existing financial education policies and practices. By identifying areas where students excel or struggle in terms of financial literacy, PISA highlights the effectiveness of different approaches to financial education. This empirical evidence enables policymakers to tailor interventions to address specific needs and challenges, ensuring that financial education programs are targeted, relevant, and impactful.

Furthermore, PISA outcomes serve as a powerful advocacy tool for advancing financial literacy on the global agenda. The visibility of PISA results and the media attention they garner can catalyze public discourse, raise awareness, and mobilize support for financial education initiatives.

PISA 2022 tested nearly 700,000 15-year-old students in 81 OECD Member countries and partner economies on mathematics, reading, and science. The edition, with a focus on maths, was also the first to collect data on student performance, well-being, and equity before and after the COVID-19 pandemic. *The sharp decline in maths performance is three times greater than any previous consecutive change. The decline in performance can only partially be attributed to the COVID-19 pandemic, with falling scores in reading science and maths already apparent prior to 2018. Overall, on average, the PISA 2022 assessment saw an unprecedented drop in performance across the OECD. Compared to 2018, mean performance fell by 10 score points in reading and by almost 15 score points in maths* (PISA, 2022b).

4.2 The European Commission's Mandate for Financial Literacy

Recognizing the importance of financial literacy in promoting economic stability, social inclusion, and individual empowerment, the European Commission has taken proactive steps to prioritize financial education across the European Union (EU).

The European Commission, as the executive body of the EU, plays a central role in shaping policies and initiatives to promote financial literacy among EU citizens. Its mandate for financial literacy is grounded in the belief that empowering individuals with the knowledge, skills, and confidence to manage their finances effectively is essential for fostering economic resilience and social cohesion across member states.

The European Commission's mandate for financial literacy encompasses several key objectives aimed at enhancing financial competence among EU citizens: (1) Promoting Financial Inclusion; (2) Enhancing Consumer Protection; (3) Fostering

Financial Education; (4) Encouraging Responsible Financial Behaviour; and (5) Addressing Digital Financial Challenges (mostly, the digital divide and monitoring emerging trends in fintech innovation and digital finance). To achieve its objectives for financial literacy, the European Commission has launched various initiatives and programs, including:

- The European Financial Education Initiative (EFEI): A collaborative platform bringing together policymakers, educators, financial institutions, and civil society organizations to share best practices, resources, and expertise in financial education.
- The European Consumer Finance Network (ECFN): A network of national authorities responsible for consumer protection and financial education, to enhance cooperation and coordination among member states in monitoring and addressing consumer finance issues.
- The European Financial Competence Framework (EFCF): A standardized framework for assessing and promoting financial competence among children and youth across the EU.
- The Digital Finance Outreach (DFO) Initiative: A collaborative effort between the European Commission, financial regulators, industry associations, and consumer organizations to promote digital financial literacy and inclusion.

The European Commission's mandate for financial literacy has had a significant impact on raising awareness, improving access to financial education, and empowering EU citizens to make informed financial decisions. However, challenges remain, including the need for greater coordination among member states, the evolving nature of financial markets and technologies, and persistent socioeconomic disparities.

5 National Strategies for Financial Education

Financial education has been recognized as crucial for citizens to make informed decisions, impacting the economy and the stability of the financial system. This has led many countries to develop national financial education strategies.

While the principles of effective financial education are universal, the context in which these principles are applied can vary significantly from one country to another. In the following paragraphs, it is presented a series of case studies highlighting successful approaches to implementing national strategies for financial education in diverse contexts. By examining the experiences of countries such as Singapore, Australia, Kenya, Sweden, and Portugal, we can glean valuable insights into the factors contributing to success and the lessons learned along the way.

Singapore: The Role of Government-Private Sector Collaboration
Singapore's approach to financial education is characterized by close collaboration between the government, financial industry, and civil society. The Monetary

Authority of Singapore (MAS), the country's central bank and financial regulator, plays a leading role in coordinating efforts to promote financial literacy among citizens of all ages. MAS works closely with partner organizations, such as banks, insurers, and fintech firms, to develop and implement a wide range of financial education initiatives, including a national financial education program aimed at empowering individuals to make informed financial decisions at every stage of life; a multi-stakeholder platform comprising government agencies, financial institutions, and works with the Ministry of Education to integrate financial literacy into the school curriculum from primary to tertiary levels.

Australia: Embedding Financial Literacy in School Curriculum
Australia has been at the forefront of efforts to embed financial literacy into the school curriculum as a core competency. The Australian Curriculum, Assessment and Reporting Authority (ACARA) is responsible for developing national curriculum standards for all subjects, including financial literacy. ACARA's curriculum framework encompasses three interrelated strands: financial knowledge, understanding, and skills; financial products and services; and financial decisions and actions. Key features of Australia's approach to financial education include cross-curricular integration, developmentally appropriate learning outcomes, teacher professional development, and assessment and reporting.

Kenya: Leveraging Mobile Technology for Financial Inclusion
Kenya's experience illustrates the transformative potential of mobile technology in expanding access to financial education and services among underserved populations. Building upon the success of mobile money, the Kenyan government and private sector partners have launched a range of initiatives to promote financial literacy and inclusion, including SMS-based education campaigns, interactive voice response systems, and mobile apps and games.

Sweden: Lifelong Learning Approach to Financial Education
Sweden's approach to financial education emphasizes the importance of lifelong learning and continuous skill development in adapting to evolving financial challenges and opportunities. The Swedish National Institute for Consumer Education (*Konsumentverket*) is responsible for coordinating financial education initiatives across government agencies, educational institutions, and civil society organizations. Key features of Sweden's approach to financial education include the integration of financial education into various stages of the education system, cross-sectoral collaboration, experiential learning, and lifelong learning centers (*folkhögskolor*) that offer adult education courses, workshops, and seminars on a wide range of topics, including financial literacy.

Portugal: Looking Ahead—Digital Financial Literacy and Sustainability
Portugal has made significant steps in implementing national strategies for financial education by adopting a comprehensive and multi-faceted approach that includes the integration of financial education into formal education systems, promotion financial inclusion and consumer protection, raise public awareness, and foster partnerships and stakeholder engagement.

The strategy is integrated in *Plano Nacional de Formação Financeira* aiming to (1) improve financial knowledge and attitudes; (2) support financial inclusion; (3) develop savings habits; (4) promote the responsible use of credit; and (5) create precautionary habits. To build upon the past decade's achievements and address emerging challenges, the Plan prioritizes three strategic areas for action in 2021–2025: bolstering financial resilience, nurturing digital financial literacy, and supporting sustainability efforts.

Promoting trust in digital financial services and fostering conditions for their benefits to be realized while mitigating associated risks hinges on a solid understanding of their features. This includes both traditional products with new functionalities and entirely new offerings from digital players (e.g., electronic money, instant payments, electronic wallets, crowdfunding, P2P loans, short-term online credit, crypto-assets, InsurTech).

Financial education can and should raise awareness about the significance of individual consumption choices and how financial product and service selections can impact environmental, social, and governance (ESG) aspects of sustainability. Furthermore, it should educate consumers on the importance of their choices in directing resources toward investments that contribute to a more sustainable economic growth model.

6 Challenges and Opportunities

Despite the considerable progress made in promoting financial education globally, significant challenges remain in achieving widespread financial literacy and resilience.

Cultural and socioeconomic factors can significantly influence individuals' attitudes, beliefs, and behaviors regarding money management and financial decision-making. In many cases, deeply ingrained cultural norms and practices may conflict with modern financial principles, posing barriers to the adoption of new behaviors and habits. Moreover, socioeconomic disparities in access to education, employment, and financial resources can exacerbate inequalities in financial literacy and inclusion, leaving marginalized and vulnerable populations at a disadvantage. To address these challenges, policymakers and educators must adopt culturally sensitive and contextually relevant approaches to financial education that consider the diverse backgrounds and lived experiences of learners.

The gap between those who have access to digital technologies and the internet and those who do not is known as the digital divide. While digital technologies offer tremendous potential for expanding access to financial education and services, they also pose challenges in terms of equity, access, and affordability. Rural and remote communities, low-income households, older adults, and persons with disabilities are disproportionately affected by the digital divide, limiting their ability to benefit from online learning platforms, mobile applications, and other digital resources. To bridge the digital divide, policymakers and educators must adopt hybrid approaches

that combine digital and non-digital delivery methods to reach learners across different socioeconomic and technological contexts.

Regulatory frameworks play a critical role in shaping the environment for financial education and consumer protection. However, regulatory fragmentation, complexity, and inconsistency can create barriers to the effective delivery of financial education initiatives, hindering collaboration and coordination among stakeholders. Moreover, outdated or inadequate regulations may fail to address emerging risks and challenges in the digital age, such as cyber threats, data privacy breaches, and algorithmic biases. To address these challenges, it may involve streamlining regulatory processes, harmonizing standards and guidelines, and fostering public-private partnerships that leverage the expertise and resources of diverse stakeholders.

In recent years, the field of financial education has witnessed a proliferation of innovative approaches, tools, and technologies designed to enhance engagement, effectiveness, and accessibility. Some of the most promising innovations in financial education and examining their potential to transform the way we teach and learn about money management and financial decision-making include gamification, peer-to-peer education programs, workplace financial wellness initiatives, and the consideration of psychological biases, heuristics, and decision-making processes that influence individuals' financial choices and behaviors.

7 Conclusion

The landscape of financial literacy programs is vast and complex, encompassing various stakeholders, delivery mechanisms, and evaluation frameworks.

Financial literacy programs play a crucial role in empowering individuals to make informed financial decisions and navigate the complexities of the modern economy. These programs not only enhance individuals' knowledge and skills but also foster responsible financial behaviors and attitudes, leading to improved financial well-being and resilience. By equipping individuals with the tools and confidence to manage their finances effectively, financial literacy programs contribute to economic stability, social inclusion, and overall prosperity.

The assessment of financial literacy programs is essential for ensuring their effectiveness and impact on individuals and communities. Through systematic evaluation and monitoring, stakeholders can gauge the success of these initiatives in enhancing financial knowledge, skills, attitudes, and behaviors among participants. As financial landscapes evolve, ongoing evaluation is crucial for adapting programs to meet changing needs and emerging challenges, such as digitalization, globalization, and socioeconomic disparities.

National strategies for financial education have emerged as essential frameworks for guiding coordinated efforts to promote financial literacy and inclusion. Case studies from countries such as Singapore, Australia, Kenya, Sweden, and Portugal highlight diverse approaches to implementing national strategies, emphasizing collaboration, curriculum integration, digital innovation, and sustainability.

Despite the progress made, challenges remain in achieving widespread financial literacy and resilience. Cultural and socioeconomic factors, the digital divide, regulatory complexities, and emerging risks pose significant obstacles to effective financial education. However, opportunities abound for innovation and collaboration, leveraging technology, interdisciplinary approaches, and partnerships to address these challenges and empower individuals to make informed financial decisions.

In essence, financial literacy programs are not just about imparting knowledge but also about fostering critical thinking, resilience, and empowerment. By investing in comprehensive and contextually relevant financial education initiatives, policymakers, educators, and stakeholders can contribute to building a more inclusive, resilient, and sustainable financial future.

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Using Differentiated Educational Strategies

Harnessing Problem-Based Learning in Entrepreneurial Education for a Global and Digital World

Elsa Caldeirinha

Abstract This chapter critically examines problem-based learning (PBL) within entrepreneurial education, highlighting its essential role in adapting to the demands of a rapidly digitalizing and globalizing world. Through an in-depth exploration of PBL's theoretical underpinnings, strategic design, and implementation, this chapter illustrates how PBL facilitates the development of critical entrepreneurial competencies. Drawing on diverse case studies and literature reviews, the analysis sheds light on PBL's effectiveness in fostering vital entrepreneurial skills and attitudes. Key findings reveal that PBL enhances students' problem-solving and critical thinking abilities and promotes active learning and adaptability, skills imperative for success in today's dynamic entrepreneurial landscape. This chapter offers actionable insights for educators and academic institutions seeking to leverage PBL to advance entrepreneurial education, thereby contributing to preparing students for the challenges and opportunities of the global and digital economy.

Keywords Problem-based learning · Entrepreneurial education · Digital innovation · Global perspectives · Future of work

1 Introduction

In an era marked by rapid technological advancements and dynamic business landscapes, entrepreneurial education faces the challenge of equipping students with the skills and mindset necessary to navigate the complexities of the modern world. Problem-based learning (PBL) has emerged as a transformative educational approach that can revolutionize entrepreneurial education by fostering the

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J. Jardim (ed.), *Entrepreneurial Education in a Global and Digital World*, Studies on Entrepreneurship, Structural Change and Industrial Dynamics,
https://doi.org/10.1007/978-3-032-17008-8_7

development of critical thinking, problem-solving, and collaboration skills. This chapter explores the transformative potential of PBL within entrepreneurial education, highlighting its crucial role amid the fast-paced changes brought by digitalization and globalization. As an instructional strategy renowned for its effectiveness across various educational fields, PBL has emerged as a pivotal method for fostering essential entrepreneurial competencies in students. Originating in medical education at McMaster University, Canada, PBL has expanded its influence, advocating a learner-centered approach that integrates theoretical knowledge with practical problem-solving skills in diverse disciplines. But the significance of this approach extends beyond enhancing critical thinking and problem-solving skills; it promotes lifelong learning and adaptability, which are indispensable in the rapidly evolving information age.

This chapter aims to provide an analysis of PBL's integration into entrepreneurial education, examining its theoretical foundations, strategic implementations, and the development of critical entrepreneurial skills. Through a comprehensive review of case studies and empirical evidence, we seek to uncover the nuanced impact of PBL on fostering entrepreneurial competencies, offering actionable insights for educators and institutions. These insights will enhance the integration of PBL strategies, with the ultimate goal of redefining and enriching the landscape of entrepreneurial education in a context continuously shaped by global and digital influences. The structure of this chapter follows a logical progression, beginning with examining PBL's origins and core principles, moving toward its innovative impact and practical applications in entrepreneurial education, and culminating in a discussion of the challenges and opportunities associated with its implementation. By the end of this chapter, readers will gain a comprehensive understanding of PBL's role in preparing future entrepreneurs equipped with the skills and mindset necessary to navigate and contribute to a complex, interconnected global economy.

2 Literature Review

2.1 Integrated Overview and Analysis of Problem-Based Learning (PBL)

Problem-based learning (PBL) is an immersive educational strategy that places students at the center of their learning journey, challenging them to apply knowledge to solve complex, real-world problems. Originating at McMaster University within medical education, PBL has expanded across various disciplines, gaining recognition for its adaptability to the evolving knowledge landscape and the dynamic demands of professional practice (Savery, 2006). At its core, PBL is a student-centric approach that emphasizes active engagement, self-directed inquiry, and collaborative problem-solving.

In the PBL approach, students work together in groups, supported by a tutor. The groups are presented with a complex problem and, through collaborative effort, activate their prior knowledge. The students formulate hypotheses to explain the situation and identify aspects that need further research, which will help them to construct a shared understanding of the issue. After the initial group work, students engage in self-directed study to explore the identified topics, followed by a group discussion to share their findings and create a final explanation of the problem based on their newly acquired knowledge. This cyclical process, as shown in Fig. 1, can be repeated until a thorough understanding is achieved (Duch et al., 2001).

This educational method encourages students to integrate knowledge from diverse fields, fostering a holistic problem-solving process. This shift from traditional teacher-led instruction to a facilitator-led model is fundamental in PBL, where educators guide the learning process and support students in their exploratory and reflective journey (Savery & Duffy, 1995). Critical aspects of PBL include:

1. Tackling ill-structured problems to stimulate inquiry.
2. Promoting student accountability for their learning.
3. Requiring collaborative engagement.
4. Applying acquired knowledge to reanalyze and resolve issues.

The emphasis on reflective learning within PBL enhances students' understanding of the subject matter, reinforcing the development of critical thinking, problem-solving skills, and self-directed learning capabilities, with the potential to equip students with the competencies to navigate the complexities of modern professional environments remains a compelling reason for its embrace in education. da Ferraz Filho et al. (2017) highlight PBL's role as a transformative force in education. PBL is not just an instructional method but a paradigm shift that encourages active learning and practical application, aligning with the needs of a rapidly advancing and interconnected world. By engaging students in real-world problems, PBL cultivates critical thinking, collaboration, communication, and innovation—skills indispensable for success in today's workforce.

The integration of reflective learning within the problem-based learning (PBL) approach significantly enhances students' comprehension of the subject matter while simultaneously fostering the development of essential skills such as critical thinking, problem-solving, and self-directed learning. This emphasis on reflective learning positions PBL as a powerful educational strategy with the potential to equip students with the necessary competencies to effectively navigate the intricacies and challenges of contemporary professional settings. Consequently, the capacity of PBL to prepare students for the demands of modern workplaces serves as a compelling justification for its widespread adoption in educational contexts. da Ferraz Filho et al. (2017) underscore the transformative role of PBL in education, highlighting its ability to drive meaningful change in the way students acquire knowledge and develop relevant skills. PBL represents a significant stride toward innovative and practical education. It embodies a strategy that empowers students, enriches skill sets, and aligns with the overarching objectives of modern education.

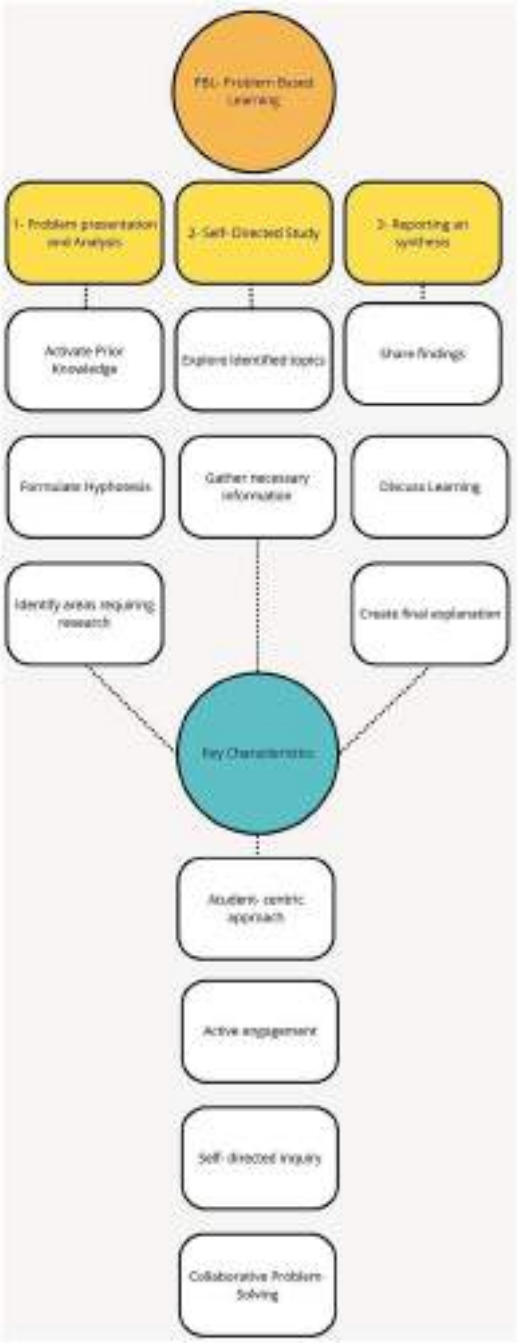

Fig. 1 PBL instructional strategy process created based on the study from Duch et al., 2001

2.2 *Innovative Impact and Practical Applications of PBL in Entrepreneurial Education*

PBL has emerged as a transformative pedagogical approach that aligns perfectly with the demands of entrepreneurship education in the digital age. By emphasizing active learning, real-world problem-solving, and student-centered inquiry, PBL offers a compelling response to the limitations of traditional educational methodologies (da Ferraz Filho et al., 2017). In entrepreneurship education, this instructional strategy goes beyond mere knowledge acquisition and fosters the development of critical entrepreneurial competencies such as problem-solving, critical thinking, creativity, and adaptability (Savin-Baden, 2000).

The innovative impact of PBL in entrepreneurship education lies in its ability to nurture an entrepreneurial mindset among students. By exposing learners to authentic business challenges and encouraging them to devise innovative solutions, it simulates the real-world dynamics of entrepreneurship (Savin-Baden, 2000). This experiential learning approach enables students to develop essential skills such as opportunity recognition, risk assessment, and resource management, which are crucial for successful venture creation and growth (Mwasalwiba, 2010).

The theoretical foundation of PBL is anchored in constructivist principles, which view learning as an active, contextualized process of knowledge construction, not merely passive reception (Savery & Duffy, 1995). This educational stance is particularly resonant in entrepreneurship, where students confront real challenges, creating directly applicable knowledge and fostering vital success skills. Additionally, social constructivism underscores the social nature of knowledge construction within PBL, mirroring the collaborative essence of the entrepreneurial field (Savery & Duffy, 1995).

PBL's pragmatic focus motivates learners to address genuine business challenges, bridging the gap between theory and application. This approach ensures the immediate applicability of acquired competencies, enhancing students' capacity to navigate business complexities (Morselli, 2019; Tan & Ng, 2006). Numerous examples demonstrate the successful implementation of PBL in entrepreneurship education programs. Business plan competitions, startup simulations, and collaborations with real entrepreneurs provide students with hands-on experience applying theoretical knowledge to practical entrepreneurial contexts (Sidhu et al., 2015). These PBL-based initiatives deepen students' understanding of entrepreneurial processes and cultivate the confidence and resilience needed to navigate the uncertainties of the entrepreneurial journey.

Moreover, the integration of digital technologies in PBL has unlocked new possibilities for entrepreneurship education. Online platforms and digital tools enable students to conduct market research, develop product prototypes, and pitch their ideas to investors, all within the framework of PBL (Nabi et al., 2017). This seamless blend of PBL and technology prepares students for the digital entrepreneurial landscape, where agility and adaptability are critical success factors.

Building on these principles, Holgaard et al. (2020) emphasize the importance of immersing students in the entire entrepreneurial process within PBL settings, from initial market research to prototype development and business model validation. This comprehensive engagement provides students with a nuanced understanding of entrepreneurship, preparing them for real-world challenges. Tailoring PBL to specific contexts enhances learning relevance and encourages reflective practice, aiding in the development of critical entrepreneurial skills (Holgaard et al., 2020).

Effective collaboration, a core element of both PBL and entrepreneurship, requires strategic facilitation by educators to promote teamwork and communication, creating an inclusive and supportive learning environment. Furthermore, integrating technology within PBL offers hands-on experiences that mirror the entrepreneurial journey, enriching students' learning and preparing them for successful ventures in a dynamic educational setting (Holgaard et al., 2020).

Munawaroh and Setyani (2022) underscore PBL's significant role in elevating student engagement and motivation within entrepreneurship education, highlighting its potential to improve learning outcomes and nurture an entrepreneurial mindset. By immersing students in real-life entrepreneurial challenges, PBL enhances motivation and fosters an environment where collaborative learning, critical thinking, and creative problem-solving thrive. These interconnected facets of the PBL experience contribute to the comprehensive development of students' entrepreneurial competencies. The active learning environment cultivates students' enthusiasm and interest while preparing them for the realities of the entrepreneurial world, where teamwork, innovation, and navigating complex challenges are paramount (Munawaroh & Setyani, 2022).

PBL enhances student motivation by immersing them in real-life challenges that require the application of theoretical knowledge in practical contexts. This engagement boosts enthusiasm and interest, as the active learning environment demonstrates the immediate relevance of their studies, connecting academic efforts to tangible problem-solving achievements (Munawaroh & Setyani, 2022). Moreover, PBL fosters student engagement and collaborative learning, enabling students to develop crucial interpersonal skills such as communication, teamwork, and conflict resolution. This aspect prepares students for the collaborative nature of the entrepreneurial world, where success often relies on effective teamwork and networking. Additionally, PBL promotes critical and inventive thinking, encouraging students to analyze problems from diverse perspectives, craft innovative solutions, and evaluate the viability and impact of their ideas. These skills are essential in the entrepreneurial field, where innovation and addressing multifaceted challenges are crucial.

The educator's role is pivotal in the success of PBL in enhancing student motivation and engagement. Transitioning from traditional instruction to a facilitative role, educators guide students through problem-solving activities, provide resources, and encourage autonomous learning. Creating a supportive, dynamic, and reflective learning environment is crucial for maximizing PBL's benefits (Munawaroh & Setyani, 2022). However, implementing PBL in entrepreneurship education is challenging. Designing authentic business problems, facilitating student-led inquiry, and assessing entrepreneurial competencies require educators to shift from

knowledge dispensers to learning facilitators (Donnellon et al., 2014). Effective PBL implementation necessitates a supportive institutional culture, adequate resources, and faculty development initiatives that empower educators to adopt this transformative approach.

Despite these challenges, PBL's potential impact in preparing students for the rapidly evolving entrepreneurial landscape is significant. By nurturing the ability to navigate uncertainty, adapt to change, and continuously learn, PBL equips aspiring entrepreneurs with the mindset and skills needed to thrive in an increasingly complex and dynamic business environment (Neck & Greene, 2011). As entrepreneurship education evolves in response to the demands of the digital age, PBL will play a crucial role in driving innovation, fostering entrepreneurial talent, and shaping the future of entrepreneurial learning.

2.3 Entrepreneurship Competencies Developed Through Problem-Based Learning

Recent research has shed light on the specific entrepreneurship competencies that can be developed through applying problem-based learning (PBL) in higher education. Sousa and Costa (2022) conducted a study to identify the competencies gained by students in problem-oriented learning and analyzed the level of development of these competencies in university courses. Their research revealed a set of entrepreneurship competencies that exhibited significant development when PBL was applied, including innovation, time management, responsibility, digital skills, trust, initiative capacity, and organizational change. The study by Sousa and Costa (2022) also performed a factor analysis, which categorized the identified competencies into three dimensions: "Problem-Solver," "Entrepreneur," and "Team Manager." This categorization, as shown in Fig. 2, provides a valuable framework for understanding the critical areas of competency development fostered by PBL in entrepreneurship education. The "Problem-Solver" dimension encompasses competencies such as time management, responsibility, problem-solving, and creativity, while the "Entrepreneur" dimension includes competencies like initiative capacity, entrepreneurship capacity, and imagination. The "Team Manager" dimension comprises decision-making, team management, and innovation competencies.

These findings reinforce the results of previous studies that have highlighted the potential of PBL in developing entrepreneurship competencies. Asgari et al. (2019) found that PBL improves entrepreneurship competencies, while Biberhofer et al. (2019) conducted interviews and verified that problem-based learning enhances the competencies of entrepreneurs.

The study by Sousa and Costa (2022) further contributes to this body of research by identifying specific entrepreneurship competencies and providing a structured framework for understanding their development through PBL. Moreover, Sousa and Costa (2022) discuss the practical implications of their findings, suggesting that universities should implement PBL methodologies to create stronger links with

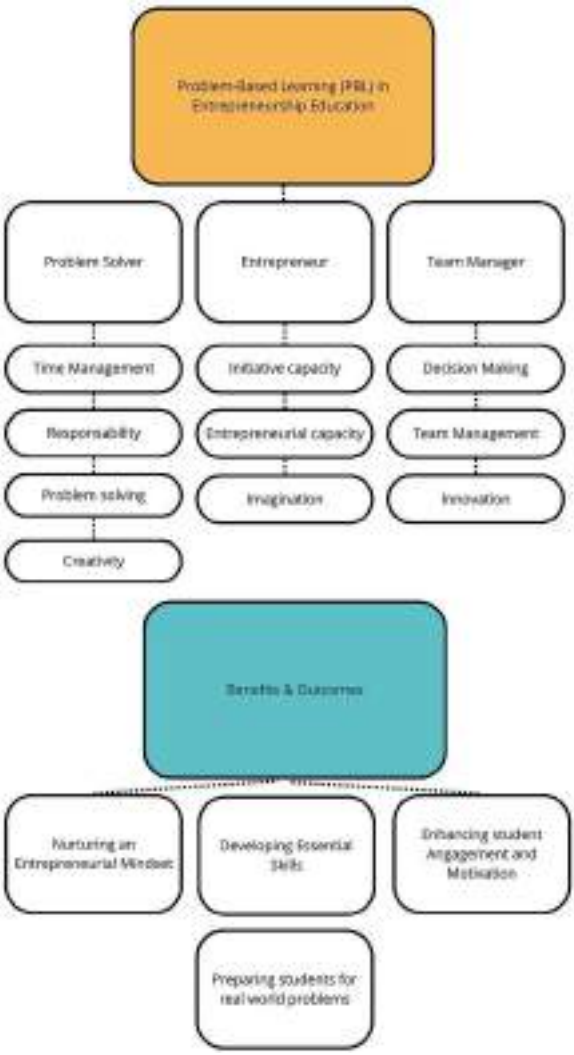

Fig. 2 PBL in Entrepreneurship Education Framework created based on the study from Sousa and Costa (2022)

organizations and develop students' competencies for solving real-world problems. This highlights the importance of PBL for fostering entrepreneurship competencies and bridging the gap between academia and industry.

By identifying specific competencies and categorizing them into dimensions, this research contributes to a more comprehensive understanding of the impact of PBL on entrepreneurship education. It offers practical implications for universities seeking to prepare students for the challenges of the entrepreneurial landscape.

The innovative impact and practical applications of PBL in entrepreneurial education, coupled with the specific entrepreneurship competencies developed through this pedagogical approach, underscore the transformative potential of PBL in

preparing students for the demands of the digital age. As entrepreneurship education continues to evolve, the integration of PBL and its ability to nurture essential competencies will be crucial in shaping the future of entrepreneurial learning and fostering a generation of innovative, adaptable, and socially responsible entrepreneurs.

2.4 Integrating PBL with Technological Advancements in the Digital and Global Context

As discussed in the previous section, the innovative impact and practical applications of PBL in entrepreneurship education can be further enhanced by integrating PBL with technological advancements. In today's digital and globally connected world, the convergence of PBL and educational technologies is crucial for preparing students to navigate the complexities of the entrepreneurial landscape. This section explores how the integration of PBL with technology can transform the learning experience, making it more interactive, immersive, and accessible while also fostering the development of digital literacy and global competencies.

Integrating problem-based learning (PBL) with educational technologies signifies a crucial convergence where pedagogical methods meet the advancements of the digital era. This transformation is essential in today's globalized educational landscape, especially after the digital shift accelerated by the COVID-19 pandemic (Zotov et al., 2020). This integration enhances the PBL framework by aligning technological advancements with the foundational educational values of PBL to cater to the needs of contemporary learners and the workforce. Digital technologies can profoundly transform the PBL experience by making learning more interactive, immersive, and accessible. Virtual simulations, online collaborative platforms, and digital repositories provide dynamic environments where students can engage deeply with complex problems (Munawaroh et al., 2021). Such technologies make learning more engaging and broaden access, breaking down geographical and time barriers and thus fostering a more inclusive educational approach. Incorporating digital tools into PBL enables students to concurrently develop problem-solving, critical-thinking abilities, and digital literacy, preparing them with a dual skillset highly valued in the current job market. However, it is crucial to ensure that technology serves as a support mechanism, enhancing the learning experience and staying within the core pedagogical objectives of PBL (da Ferraz Filho et al., 2017).

Educators must judiciously select and integrate technologies that complement the PBL experience, ensuring that technology facilitates but does not dominate the learning process (Munawaroh et al., 2021).

The adaptation of PBL to digital platforms in the context of entrepreneurship education exemplifies how educational practices can evolve to meet the demands of the twenty-first century. E-PBL, or Electronic Problem-Based Learning, offers a glimpse into a future of education that is both digital and globally oriented, providing platforms that allow students to engage with learning materials, interact with

educators, and collaborate with peers in a virtual environment (Munawaroh et al., 2021). Moreover, the global context of today's educational landscape necessitates that PBL not only adapts to digital platforms but also caters to an international audience. E-PBL's ability to reach students across various geographic locations highlights its potential to prepare students for an increasingly interconnected world, emphasizing the importance of understanding and collaboration across cultural and national boundaries (Munawaroh et al., 2023).

In addition to the considerations mentioned earlier, ensuring digital equity is paramount. As technology becomes increasingly integrated into educational practices, it is essential to address ethical concerns and ensure all students have equitable access to technological resources, thus preventing a digital divide and promoting inclusivity in the digital learning environment.

2.5 Practical Case Studies: Demonstrating PBL'S Application and Effectiveness

Having explored the theoretical and pedagogical aspects of PBL in entrepreneurial education, let's examine its practical implementation and impact through the following case studies:

Case Study 1: PBL in Life Sciences—Bridging Science and Entrepreneurship Education

Fassbender et al. (2022) conducted a study that explored the integration of problem-based learning (PBL) and entrepreneurship education within the life sciences domain. The research aimed to investigate the effectiveness of PBL in enhancing student engagement, motivation, and understanding of entrepreneurship while assessing its potential applicability across various nonbusiness fields. This study focused on instilling a comprehensive skill set in life science students, preparing them for the evolving dynamics of the workforce, where transitions into business roles have become increasingly common. The researchers adopted a multidisciplinary approach, utilizing PBL and case studies incorporated within a comprehensive learning setting (Fig. 3) to foster essential entrepreneurial competencies in life science students. This method encouraged students to apply their scientific knowledge to real-world economic challenges, enhancing their entrepreneurial skills and mindset. The study specifically examined a "Plant Biotechnology" master's program, where a targeted module integrated entrepreneurship education by blending scientific expertise with entrepreneurial principles.

The learning environment in this module was designed to mirror real-world conditions as closely as possible, positioning the students in decision-making roles. The students were confronted with a business challenge within a biological framework and were encouraged to apply their learning in a practical, problem-solving context. The starting point of the learning process was a business problem as shown in Fig. 4 within a biological context, which put the students in the role of decision-makers.

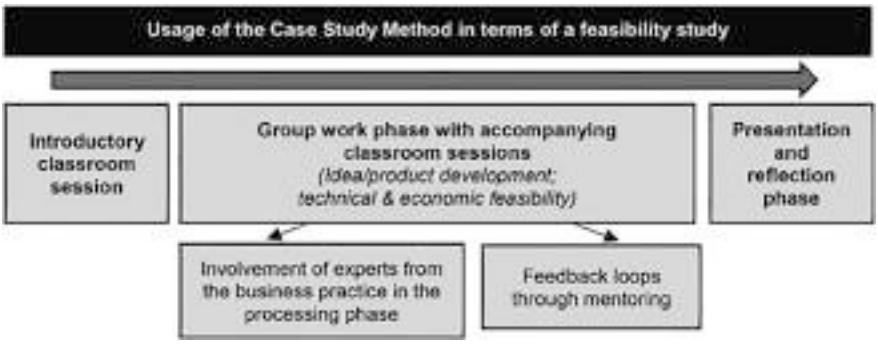

Fig. 3 Phases of the learning environment, Fassbender et al. (2022)

[...] Sounds quite interesting, what you can do with algae–there's certainly a lot of money behind it, you think to yourself. But now it's time: You quickly grab your packed bag and get on your bike to arrive on time for the lab course. After a short time, you are at the lab bench and conscientiously carry out the tasks assigned to you analysing a plant species together with your team partner Tamara. Meanwhile, you tell her about the article you read this morning and both of you are already thinking about how diverse algae are and how great it would be if you earn money with algae sooner or later. Ideally right now, so that you can finance your studies directly and no longer have to take on various casual jobs–a little dreaming has still to be allowed! [...]

Fig. 4 Excerpt from the case description, Fassbender et al. (2022)

Through this integration, students could engage deeply with the entrepreneurial process, from ideation to economic evaluation. They utilized tools like the Business Model Canvas (Osterwalder & Pigneur, 2010) to contextualize their scientific projects within a business framework. While traditional assessments showed no significant increase in economic knowledge, alternative evaluative methods, such as self-assessments and reflective essays, positively impacted students' skills and attitudes toward entrepreneurship.

The findings of this study highlighted the effectiveness of PBL in fostering knowledge acquisition, critical thinking, problem-solving skills, and an entrepreneurial mindset within the life sciences context. Moreover, the study's insights underscored the potential for PBL to be adapted across various nonbusiness disciplines, offering a versatile educational strategy that prepares students for diverse career paths. The reflective component of this study, which addressed the challenges and solutions in implementing PBL in the "Plant Biotechnology" program, provided practical insights for educators looking to adopt similar approaches.

In conclusion, integrating PBL and entrepreneurship education within the life sciences offers a holistic approach to developing students' competencies, aligning with the demands of the modern workforce. The adaptability of PBL across different fields further emphasizes its value as a critical educational strategy in fostering an innovative and problem-solving mindset among students, preparing them for

success in an interconnected and dynamic professional landscape. This case study demonstrates the potential of PBL to bridge the gap between scientific knowledge and entrepreneurial skills, equipping life science students with the necessary tools to navigate the complexities of the modern business world.

Key Takeaways

1. PBL effectively bridges nonbusiness fields and entrepreneurship education, fostering a comprehensive skill set in students.
2. Integrating PBL prepares students for the evolving dynamics of the workforce, where transitions into business roles are becoming more common.
3. A multidisciplinary approach utilizing PBL and case studies enhances students' entrepreneurial skills and mindset.

Case Study 2: Opportunity-Oriented Problem-Based Learning Model (OOPBL) in Entrepreneurship Education

In the evolving landscape of entrepreneurship education, the opportunity-oriented problem-based learning (OOPBL) model emerges as a pivotal instructional strategy, reshaping how students engage with the entrepreneurial process. This case delves into integrating OOPBL within a university setting, specifically within the "Economics of Entrepreneurship" course at Riga Technical University. It provides a nuanced understanding of its impact on student learning and entrepreneurial skill development. OOPBL is a specific application of problem-based learning (PBL) tailored to foster skills in opportunity recognition, creation, and growth within entrepreneurship education. While PBL, in general, focuses on solving problems through a learner-centered approach, OOPBL places a particular emphasis on identifying and exploiting opportunities, which is a core aspect of entrepreneurship. This approach encourages students to apply their knowledge and skills in real-world situations, fostering an entrepreneurial mindset and capabilities essential for creating and growing new ventures (Fig. 5).

An exploratory literature review was the foundation for this analysis, examining the OOPBL model's efficacy in fostering essential entrepreneurial competencies. The study scrutinized students' reflections on their engagement, evaluating their experiences, attitudes, and intentions for future entrepreneurial endeavors (Oganisjana & Laizans, 2015).

The examination revealed a generally positive reception of the OOPBL model among students, highlighting its role in enhancing their ability to identify and exploit entrepreneurial opportunities. Students appreciated the model's experiential learning aspect, which significantly contributed to their problem-solving skills and opportunity recognition capabilities, essential for navigating the entrepreneurial landscape. Despite the favorable feedback, the study also identified areas for improvement, including enhancing group dynamics and addressing language barriers in a multilingual educational context (Oganisjana & Laizans, 2015).

The OOPBL model exemplifies a shift toward a more interactive and practical approach to entrepreneurship education, aligning closely with the real-world demands of the entrepreneurial sector. While the model's benefits are evident, the

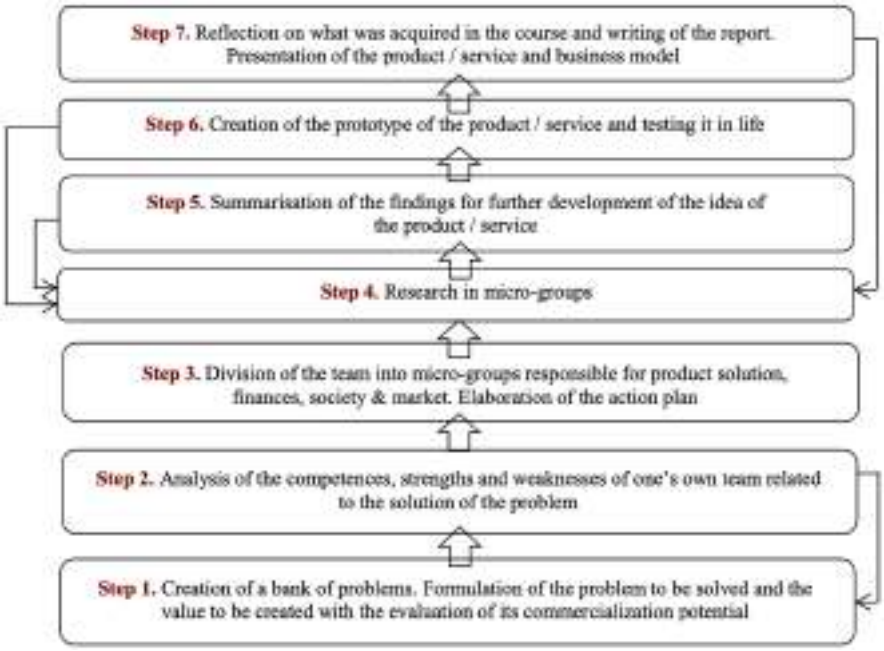

Fig. 5 Opportunity-oriented problem learning model for enhancing student entrepreneurship (Oganisjana & Laizans, 2015)

feedback underscores the necessity of refining group collaboration mechanisms and language support to optimize the learning experience for all students.

This case underscores the value of incorporating OOPBL into entrepreneurship education, advocating its adoption as a standard pedagogical approach. By providing students with a robust framework for understanding and engaging with real-world entrepreneurial challenges, the OOPBL model equips them with the skills and mindset necessary for success in their future ventures. As educators and institutions explore the model's broader application, ongoing research will be crucial in assessing its long-term effectiveness and adaptability to various educational contexts (Oganisjana & Laizans, 2015).

Exploring PBL in entrepreneurship education demonstrates a promising trajectory toward a more interconnected and application-focused learning paradigm. These cases exemplify how educational frameworks can evolve to meet the demands of a rapidly changing world, preparing students academically and practically for their future roles in society. Academic institutions are encouraged to integrate these methodologies further, recognizing their value in fostering critical, innovative, and entrepreneurial mindsets among students. As these approaches gain traction, ongoing assessment and adaptation will ensure their continued relevance and effectiveness in equipping students with the skills necessary to excel in their chosen fields (Oganisjana & Laizans, 2015).

Key Takeaways

1. OOPBL is a tailored application of PBL that fosters skills in opportunity recognition, creation, and development within entrepreneurship education.
2. Integrating OOPBL in a university setting enhances student learning and entrepreneurial skill development.
3. OOPBL encourages students to apply their knowledge and skills in real-world situations, fostering an entrepreneurial mindset and capabilities essential for creating and growing new ventures.

2.6 Entrepreneurship Education and the Future of the Workforce: Integrating Insights from Practical Case Studies

Entrepreneurship Education (EE) is pivotal in preparing the future workforce, especially within an educational landscape that increasingly values adaptability, innovation, and cross-disciplinary skills. Integrating EE is essential for equipping graduates with the competencies to navigate the dynamic demands of the job market and entrepreneurial ventures. This necessity aligns with the United Nations Principles for Responsible Management Education (PRME), emphasizing the importance of fostering a skilled, ethically grounded, socially responsible workforce (Igwe et al., 2019).

The development of the future workforce necessitates a paradigm shift in higher education, advocating for pedagogical approaches like problem-based learning (PBL) that promote critical thinking, problem-solving, and entrepreneurial skills.

Despite the recognized value of such educational strategies, universities often need help to fully prepare students for the evolving demands of today's job market. Implementing EE and PBL within the curricular, co-curricular, and extra-curricular spheres offers a holistic learning approach, blending knowledge acquisition with teaching innovation and experiential learning (Igwe et al., 2019).

The practical case studies highlighted in this chapter exemplify the effective application of PBL in fostering essential competencies in diverse educational settings. The life sciences case study demonstrates how integrating PBL with entrepreneurial thinking prepares students for interdisciplinary challenges, aligning their education with the workforce's evolving nature (Fassbender et al., 2022). Similarly, the OOPBL case study from Riga Technical University showcases how focused PBL applications can enhance students' opportunity recognition and development skills, which are crucial for entrepreneurial success (Oganisjana & Laizans, 2015).

These case studies offer valuable insights into the practical benefits of PBL in EE, illustrating how such educational strategies can significantly impact students' preparedness for the entrepreneurial aspects of the modern workforce. They highlight the necessity of aligning educational practices with the demands of a globalized and digitalized job market, ensuring students are knowledgeable and adept at

applying their learning in real-world contexts. Reflecting on the integration of PBL within EE, it is evident that such educational approaches are instrumental in shaping a workforce that is adaptable, innovative, and equipped to meet the challenges of the global entrepreneurial landscape. The insights from the case studies reinforce the need for educational policies and practices that emphasize experiential learning, cross-disciplinary collaboration, and a strong focus on real-world application. By doing so, educators and policymakers can ensure that students are prepared for the future job market and capable of driving innovation and contributing positively to society's future economic and social well-being.

2.7 Navigating the Challenges and Harnessing Opportunities of PBL in Entrepreneurial Education

Implementing problem-based learning (PBL) within entrepreneurial education presents unique challenges and opportunities, requiring adept navigation to optimize effectiveness. One significant challenge is the transition of educators from traditional instructors to facilitators, which necessitates comprehensive training to equip them with the skills necessary for guiding students through the PBL process (da Ferraz Filho et al., 2017). This training should cover the essentials of PBL, from designing relevant and engaging problems to supporting student-led inquiry and collaboration. Selecting appropriate, real-world issues that encourage deep investigation and collaboration is vital for PBL's success. These problems should be complex, integrating knowledge across various disciplines and relevant to students' future professional contexts (Jonassen & Hung, 2015). Aligning PBL with existing curricula is another hurdle, demanding meticulous integration to ensure that PBL's incorporation complements and enhances the learning objectives. Institutions must establish supportive frameworks to facilitate this integration, considering factors like logistics, resource allocation, and suitable assessment methods tailored to the PBL approach (da Ferraz Filho et al., 2017).

A recent study by Holgaard et al. (2022) identified three main challenges students experience with PBL:

1. **Tunnel vision:** the power of the idea: Students may be reluctant to question or "kill" their ideas, leading to unrealistic expectations and blind spots related to similar solutions.
2. **Intensified boundary work:** Students must cross different boundaries, such as adapting to the entrepreneurial PBL process, engaging in interdisciplinary interactions, and collaborating with potential user groups.
3. **Lacking resilience:** Students face personal challenges related to insecurity, uncertainty, and the impact of the entrepreneurial project on their personal lives.

The study also highlighted the need for critical thinking as an essential competency in the entrepreneurial mindset, which needs to be explicitly emphasized in

competence frameworks like the *Entrepreneurship Competence Framework*—EntreComp (Bacigalupo et al., 2016). Additionally, the study suggests that adapted models for problem design in entrepreneurial PBL are necessary, as students often need help planning and getting an overview of expected deliverables in this context. Furthermore, the study emphasizes the importance of effective learning outcomes in entrepreneurship education curricula, as students may have difficulty acknowledging the learning outcomes of a start-up project when they give up on their idea (Holgaard et al., 2022).

Key Takeaways: Challenges in Implementing PBL in Entrepreneurial Education

1. Authentic and Manageable Problem Design: Designing ill-structured problems that are both authentic and manageable is a critical challenge in implementing PBL in entrepreneurial education.
2. Effective Facilitation and Guidance: Ensuring effective educator facilitation and guidance throughout the PBL process is essential for successful implementation.
3. Curriculum and Assessment Alignment: Aligning PBL with existing curricula and assessment methods is crucial for seamless integration and evaluation of learning outcomes.
4. Variability in Student Engagement: Addressing the variability in student motivation and engagement is a key challenge in implementing PBL, as it can impact the overall effectiveness of the learning experience.

Despite these challenges, PBL presents a dynamic and innovative approach to entrepreneurship education. It engages students in real-world problem-solving, fostering the acquisition of crucial entrepreneurial skills such as opportunity recognition, strategic planning, and creative thinking (Solcan, 2016). Moreover, PBL's collaborative learning environment mirrors the essential teamwork and communication skills vital in entrepreneurship (Walker & Leary, 2009). Through PBL, students experience the application of theoretical knowledge in practical scenarios, enhancing their readiness for the entrepreneurial field. This learning environment enables students to develop vital interpersonal skills that reflect the collaborative nature of the business world (Solcan, 2016).

Key Takeaways: Opportunities in Implementing PBL in Entrepreneurial Education

1. Real-world Problem-Solving: PBL engages students in solving authentic problems, fostering crucial entrepreneurial skills like opportunity recognition, strategic planning, and creative thinking.
2. Collaborative Learning Environment: PBL's collaborative nature mirrors the teamwork and communication skills essential in entrepreneurship, preparing students for business world challenges.
3. Application of Theoretical Knowledge: PBL allows students to apply theory to practice, enhancing their readiness for entrepreneurship and bridging the gap between academia and real-world business.

4. Development of Interpersonal Skills: PBL cultivates vital interpersonal skills, such as communication, teamwork, and conflict resolution, which are critical for success in the collaborative business environment.

Overcoming the challenges of PBL implementation is pivotal for harnessing its full potential in entrepreneurial education. Institutions and educators committed to this educational approach must foster an environment where students actively learn about entrepreneurship, developing the skills and mindset essential for navigating the entrepreneurial landscape. By thoughtfully integrating PBL and leveraging its benefits, educational institutions can prepare students for the complexities and dynamism of the entrepreneurial world (da Ferraz Filho et al., 2017; Solcan, 2016).

To achieve this goal and effectively navigate the obstacles and harness the opportunities of PBL in entrepreneurial education, educators and institutions should consider the following strategies:

1. Invest in comprehensive training for educators transitioning from traditional instructors to PBL facilitators.
2. Collaborate with industry partners to identify and design relevant, complex problems that mirror real-world entrepreneurial challenges.
3. Develop a supportive institutional framework that facilitates the integration of PBL into existing curricula, considering logistics, resource allocation, and assessment methods.
4. Foster a learning environment encouraging student motivation and engagement through active learning, collaboration, and reflection.
5. Continuously evaluate and refine the implementation of PBL, adapting to students' evolving needs and the entrepreneurial landscape.

By addressing these challenges and capitalizing on the opportunities presented by PBL, entrepreneurial education can be transformed into a dynamic, engaging, and effective learning experience. Students will be better equipped with the knowledge, skills, and mindset necessary to thrive in the complex and ever-changing world of entrepreneurship. Ultimately, the successful integration of PBL in entrepreneurial education has the potential to nurture a generation of innovative, adaptable, and socially responsible entrepreneurs who are prepared to tackle the challenges of the twenty-first-century job market.

3 Methodology

This chapter employed a systematic literature review methodology following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses to comprehensively examine and synthesize the existing scholarly literature on the integration of problem-based learning (PBL) in entrepreneurial education.

3.1 Research Questions: The primary objective of this systematic review was to answer the following research questions:

1. How is PBL integrated into entrepreneurial education?
2. What is the impact of PBL on student outcomes in entrepreneurial education?

3.2 Search Strategy and Eligibility Criteria: Scholarly articles were systematically sourced from prominent academic databases chosen for their extensive educational and entrepreneurial research literature coverage. The search strategy employed a combination of keywords: ("Problem-Based Learning" OR "PBL") AND ("entrepreneurial education" OR "entrepreneurship education"). The searches were conducted in March and April 2024. Studies were eligible for inclusion if they met the following criteria:

1. Written in English or Portuguese.
2. Published between 2000 and 2022.
3. Focused on the implementation of PBL in entrepreneurial education and its impact on student outcomes.

Conference abstracts, editorials, dissertations, and non-peer-reviewed materials were excluded.

3.3 Inclusion and Exclusion Criteria: The selection criteria included peer-reviewed journal articles focusing on PBL's implementation in entrepreneurial education and its impact on student outcomes like motivation and engagement. Exclusions encompassed non-peer-reviewed materials, studies not specifically addressing PBL in entrepreneurial contexts, and articles unavailable in English AND Portuguese.

3.4 Screening and Selection Process: A two-stage screening process was implemented. Titles and abstracts were reviewed, followed by a full-text review to determine eligibility.

3.5 Data Extraction and Synthesis: A standardized data extraction form was used to collect relevant information from the included studies, such as author(s), publication year, research objectives, study design, sample size, PBL implementation details, outcome measures, and key findings. Due to the heterogeneity of the included studies in terms of design, PBL implementation, and outcome measures, a narrative synthesis was conducted to summarize and interpret the findings.

3.6 Quality Assessment: A thorough quality assessment of the selected articles ensured the research's validity, focusing on methodological rigor, the alignment of designs with objectives, the appropriateness of data analysis, and the clarity of reported outcomes.

4 Findings

The literature review reveals that PBL is highly effective in entrepreneurial education, enhancing students' critical thinking, problem-solving skills, and ability to apply theoretical knowledge in real-world scenarios. Studies consistently show that PBL fosters an active learning environment, encouraging students to engage deeply

with content and develop essential entrepreneurial competencies. A recurring theme in the literature is the positive impact of PBL on student motivation and engagement. Many studies underscore the role of PBL in increasing students' intrinsic motivation to learn and persist in challenging tasks. Another typical pattern is the emphasis on collaborative learning within PBL settings, which mirrors the teamwork and communication skills vital in the entrepreneurial field. However, the literature also highlights challenges, such as the need for well-designed problems and effective facilitation, to ensure the successful implementation of PBL in entrepreneurial education. While the benefits of PBL are well-documented, more research is needed regarding its long-term impact on students' entrepreneurial success postgraduation. Additionally, more comparative studies need to be conducted to evaluate PBL against other pedagogical approaches in entrepreneurial education, which could provide deeper insights into its unique advantages and limitations. While most studies champion the benefits of PBL, some research presents contrasting views, pointing out the difficulties in assessing student performance in PBL settings due to the subjective nature of problem-solving and collaborative work. There are debates around the optimal level of structure and guidance in PBL, with some advocating for more freedom and others for more instructor-led direction to ensure learning objectives are met.

5 Discussion of Findings

The synthesis of findings from the literature review underscores the significant role that problem-based learning (PBL) plays in entrepreneurial education. This discussion aims to delve deeper into the implications of these findings, exploring the nuanced dynamics of PBL's impact on student learning and the broader educational context. The evidence suggests that PBL effectively cultivates critical thinking and problem-solving skills, essential competencies in the entrepreneurial domain. By engaging students in real-world problems, PBL transcends traditional rote learning, encouraging the application of knowledge in practical scenarios. This active engagement is pivotal in preparing students for the unpredictable nature of entrepreneurial ventures, where theoretical knowledge must often be swiftly applied to complex, evolving situations. The consistent theme of increased student motivation and engagement in PBL settings is particularly noteworthy. The intrinsic motivation fostered by PBL is crucial for sustaining student interest and perseverance, especially in the face of entrepreneurial challenges. This finding aligns with the broader educational goal of promoting lifelong learners equipped to navigate and adapt to the ever-changing business landscape. The emphasis on collaborative learning within PBL mirrors the collaborative essence of entrepreneurship. Teamwork and communication are not just educational byproducts but core skills in the entrepreneurial toolkit. The alignment of PBL's collaborative nature with the demands of the entrepreneurial sector underscores its relevance and efficacy as a pedagogical approach in this field. While the advantages of PBL are clear, the literature also points out

implementation challenges. The necessity for well-designed problems and effective facilitation highlights the need for skilled educators who can navigate the complexities of PBL. These challenges emphasize the importance of continuous professional development and resource allocation to ensure that PBL can be implemented effectively and sustainably in entrepreneurial education. The identified gaps in research, particularly concerning the long-term impacts of PBL on entrepreneurial success, signal a need for longitudinal studies. Research could provide valuable insights into how PBL influences students' career trajectories and entrepreneurial endeavors beyond the classroom. Comparative studies between PBL and other pedagogical approaches could further elucidate PBL's unique contributions to entrepreneurial education. The literature contains contrasting views, particularly regarding student performance assessment and the optimal level of instructional guidance in PBL, which invites further exploration. These debates highlight the dynamic and evolving nature of PBL as a pedagogical strategy, suggesting that its implementation may need to be tailored to specific educational contexts and student cohorts. The discussion of findings reaffirms the value of PBL in entrepreneurial education while acknowledging its implementation's complexities. As educators and institutions strive to adapt their pedagogical approaches to the demands of the twenty-first-century workforce, PBL stands out as a potent tool for fostering essential entrepreneurial skills. However, its successful integration requires careful consideration of design, facilitation, assessment strategies, and commitment to ongoing research and evaluation.

6 Conclusion

This comprehensive analysis of problem-based learning (PBL) within entrepreneurial education underscores its significant transformative potential. The findings reveal that PBL is not just a pedagogical tool but a pivotal framework that cultivates essential competencies for entrepreneurial success. Through active engagement in problem-solving, critical thinking, and collaborative learning, students acquire a robust skill set, preparing them for the unpredictable nature of the business world.

Our exploration highlights PBL's effectiveness in enhancing critical analytical skills, fostering problem-solving abilities, and nurturing an adaptable mindset—traits imperative for navigating the complex entrepreneurial landscape. Integrating PBL in entrepreneurial education boosts student motivation and engagement and instills a deep understanding of entrepreneurial processes and challenges.

The potential for PBL's broader adoption and innovation is significant, particularly with the strategic integration of technological advancements. These tools can enrich the PBL experience, offering students more immersive and relevant learning opportunities. Educators are encouraged to embrace this integration, fostering environments where students can leverage technology to tackle real-world problems innovatively.

Institutions play a crucial role in this educational transformation. They are tasked with creating an infrastructure that supports PBL, offering professional development for educators, and fostering a culture that values innovative educational practices. By prioritizing PBL, institutions empower students with a holistic educational experience, equipping them with the knowledge, skills, and mindset necessary for entrepreneurial success.

In conclusion, PBL's role in entrepreneurial education is paramount. It enhances student learning outcomes and aligns education with the dynamic demands of the global business environment. As we move forward, the call to action for educators and institutions is clear: to integrate PBL as a core strategy in educational curricula, ensuring that students are well-equipped to face the challenges and seize the opportunities of the future entrepreneurial landscape.

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Evaluation in Entrepreneurial Education: Possibilities and Limits

Anderson de Almeida Barros and Andrea Karla Ferreira Nunes

Abstract The general objective of this study was to understand the possibilities and limitations of evaluations in active methodologies in various levels of entrepreneurial education, understanding, as pointed out by Lopes (*Ensino de Empreendedorismo no Brasil: Panorama, tendências e melhores práticas*. Rio de Janeiro: Alta Books, 2017), the use of methodologies that allow students to learn by doing is the foundation for the development of entrepreneurial competencies. To this end, an exploratory and descriptive research was conducted as a contribution to the discussion on the topic. The research was carried out in the public education network at the infant, primary, secondary, and tertiary levels in the municipalities of Arapiraca, Boca da Mata, and Jacaré dos Homens, all placed in the state of Alagoas, in the Brazilian Northeast. The data collection instrument was developed using Google Forms and sent to a population of 380 teachers. We received 180 valid responses, representing a sample of 47%. The data indicate that the education network studied is mostly composed of female teachers with diverse age ranges, with an increasing age representation concerning the level of education they teach. The level of education also increases concerning their teaching level. The data reveal that 63% of teachers seek to develop entrepreneurial competencies in their students, although only 26% emphasize the use of entrepreneurial education. Active methodologies are used, on average, by 46% of teachers, who use a variety of assessment possibilities at all levels of education. Resource scarcity, adequacy of physical spaces, and the number of students per class were pointed out as limitations.

Keywords Entrepreneurial education · Entrepreneurial competencies · Levels of education · Active methodologies · Learning assessment

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J. Jardim (ed.), *Entrepreneurial Education in a Global and Digital World*, Studies on Entrepreneurship, Structural Change and Industrial Dynamics,
https://doi.org/10.1007/978-3-032-17008-8_8

1 Introduction

It is still quite common for society to use the term entrepreneurship as a characterization for starting a business. However, according to Dolabela (2003), being an entrepreneur, in any field, is about being someone who dreams and seeks to turn those dreams into reality. Supporting this same idea, Jardim and Franco (2012) emphasize that an individual who exhibits proactive attitudes in the face of adversity or necessity is an entrepreneurial individual.

The European Union has been focusing special attention on the education of young people, aiming to prepare them for both professional and personal life. *EntreComp* is a framework created by the European Union as an initiative to be implemented, where experiences of entrepreneurial education have been mapped out. The framework presents a list of 15 entrepreneurial competencies to be used by teachers at all levels, especially those in basic education.

For Carvalho (2022), the *Entrecomp* framework proposed by the European Union is a concept aimed at introducing entrepreneurship into formal education at all levels and aligns with other educational models such as: (i) UNESCO's Four Pillars of Education; (ii) the National Research Council's Twenty-First Century Skills; (iii) the Four Cs of Education by the National Education Association (NEA) in America; (iv) Brazil's National Common Curricular Base; and (v) the 17 Sustainable Development Goals of the United Nations (UN).

The possibility of convergence between the *Entrecomp* model and the *BNCC* (National Common Curricular Base) allows a reflection on the alignment of the framework proposed by the European Union regarding entrepreneurial education with the guidelines proposed by the Brazilian Ministry of Education for education at all stages of basic education.

The *BNCC* is a normative document that defines a set of essential learnings to be developed in all students during the three stages of Basic Education: (i) early childhood education, (ii) elementary education, and (iii) high school (Brazil, 2018). The *BNCC* defines competence as the mobilization of knowledge, skills, attitudes, and values to help solve the demands of daily life, citizenship, and the world of work (Brazil, 2018). For the development of competencies, whether entrepreneurial or not, it is necessary to adequately define methodologies and evaluation criteria, as traditional teaching methods do not meet the needs of entrepreneurs according to Vieira et al. (2013).

Moran (2018) defines methodologies as broad guiding principles of the teaching and learning process, implemented through specific, differentiated, and concrete strategies, approaches, and techniques. The author also defines active methodology as a teaching strategy based on the active participation of students, who become protagonists of their learning, whether it is the result of knowledge construction individually, in groups, or through tutorials.

According to Lopes (2017), the use of methodologies that allow students to learn by doing is fundamental for the development of entrepreneurial competencies. The use of active methodologies in the teaching-learning process is essential for entrepreneurial education.

In Mattar's view (2017), the variety of techniques or teaching methods provided by active methodologies can change the way entrepreneurship is taught and assessed, such as case studies, flipped classrooms, dramatization and simulation, research, game-based learning, gamification, design thinking, peer assessment, and self-assessment.

According to Castanheira (2023), several methodologies are used; all of them are adapted to the age group or educational level to which they are intended, since entrepreneurial competencies are often confused with personality traits and intellectual development.

From the presented context, the research question arises: what are the possibilities and limitations of assessments of active methodologies at various levels of entrepreneurial education?

Castanheira (2023) highlights that competencies can be taught and improved, whether entrepreneurial or not. Identifying the possibilities and limitations of assessments of active methodologies in entrepreneurial education allows for the expansion of the discussion on the development of these competencies and their improvement. This is the general objective of this study.

Therefore, a study was conducted where the locus of the research was public educational institutions at various levels in the state of Alagoas, in the Brazilian Northeast, as empirical contributions.

As means to achieve the main objective of the study, the following specific objectives were formulated: (i) to describe the profile of the survey respondents; (ii) to relate the use of entrepreneurial competencies; (iii) to identify the use of active methodologies by educational level.

Following this introduction, the next section, the theoretical framework, addresses some aspects of entrepreneurial education, the *BNCC* and educational levels, active methodologies, and learning assessments. Then, the methodology of exploratory and descriptive research is outlined. Next, the empirical contributions are presented and discussed. Finally, in the last section, the final considerations, study limitations, and suggestions for future studies are presented. Afterward, the references used and the data collection instrument (Annex A) are presented.

2 Literature Review

2.1 Entrepreneurial Education

Dolabela (2003) introduces the concept of Entrepreneurial Pedagogy as the promoter of entrepreneurial education, aiming primarily to motivate and prepare students to dream and pursue its realization:

> Initially, the student develops a dream, a future where they wish to be, go, or become. Then, they strive to achieve this dream and, to do so, they are motivated to learn what is necessary for this purpose. The object of Entrepreneurial Pedagogy is to stimulate and prepare the student to dream and pursue the realization of the dream. The constant pursuit of the

> dream's realization is the source of generating and maintaining the emotional level that gives the individual the ability to persist and continue despite the obstacles, errors, and undesirable results they may encounter. The need for knowledge arises from the inexorable desire to access the elements necessary for the realization of the dream. The activities of seeking, learning from mistakes, and therefore evolving concern entrepreneurial knowledge. Thus, pedagogical activity will primarily focus on the connection between the dream and its realization. (Dolabela, 2003, p. 55).

Lopes (2017) outlines the European Union's recommendations regarding elements for the practice of Entrepreneurial Education:

(i) Stimulate attitudes and basic skills of the entrepreneurial mindset or behavior: initiative, creativity, risk-taking, independence, self-confidence, and planning to achieve goals.
(ii) Expand students' awareness of career possibilities as self-employed (self-employment) and entrepreneurial.
(iii) Use practical methodologies in which students engage in projects or activities outside the bounds of the educational institution, linking them to the local community or the business world.
(iv) Develop basic business skills, knowledge of how to start and develop commercial or social activities, and equip students to create their own jobs or self-manage.

According to Castanheira (2022), the European Union, aiming to achieve a consensus involving all stakeholders, created *EntreComp*, which aims to establish a connection between the fields of work and education. The framework proposal culminated in the conception of a reference framework with 15 entrepreneurial competencies to be worked on by teachers, especially in basic education (Bacigalupo et al., 2016).

The Entrecomp framework presents 15 competencies distributed in three fields: Ideas and Opportunities, Resources, and Actions. In each of the three areas, a set of five entrepreneurial competencies that can be developed throughout life was elaborated (Bacigalupo et al., 2016).

Carvalho's study (2022) presents the convergence between the *EntreComp* model and the *BNCC*. It emphasizes that it is possible to build pedagogical practices that will be developed in students jointly, at least one of the competencies listed by the *BNCC* and one indicated by the *EntreComp* framework.

The National Common Curricular Base (*BNCC*) and Educational Levels.

The document serves as a reference for the construction of curricula to be followed by educational networks in municipalities, states, and the Federal District (Brazil, 2018). The *BNCC* is part of the National Policy for Basic Education, aiming to ensure the rights of learning and development in accordance with the National Education Plan (*PNE*). The regulation provides for the development of ten general competencies during basic education (Table 1):

The *BNCC* is composed of three levels that make up Basic Education: Early Childhood Education, Elementary Education, and High School (Brazil, 2018). Early Childhood Education is organized into six learning rights and five fields of experiences related to the ten general competencies of the *BNCC*. This level of

Table 1 General competencies of the *BNCC*

1. **Knowledge**: Value and use historically constructed knowledge about the physical, social, cultural, and digital world to understand and explain reality. Continue learning and collaborating to build a fair, democratic, and inclusive society.
2. **Scientific, critical, and creative thinking**: Exercise intellectual curiosity and resort to the proper approach of the sciences, including research, reflection, critical analysis, imagination, and creativity, to investigate causes, elaborate and test hypotheses, formulate and solve problems, and create solutions (including technological ones) based on knowledge from different fields.
3. **Cultural repertoire**: Value and enjoy the diverse artistic and cultural manifestations, from local to global, and also participate in diversified practices of artistic-cultural production.
4. **Communication**: Use different languages - verbal [oral or visual-motor, such as *Libras*(Brazilian sign language) and writing], bodily, visual, sound, and digital - as well as knowledge of artistic, mathematical, and scientific languages, to express oneself and share information, experiences, ideas, and feelings in different contexts and produce meanings that lead to mutual understanding.
5. **Digital culture**: Understanding, using, and creating digital information and communication technologies critically, meaningfully, reflectively, and ethically in various social practices (including school ones) to communicate, access, and disseminate information, produce knowledge, solve problems, and exercise protagonism and authorship in personal and collective life.
6. **Work and life project**: Value the diversity of cultural knowledge and experiences and appropriate knowledge and experiences that enable understanding the relationships typical of the world of work and make choices aligned with the exercise of citizenship and their life project, with freedom, autonomy, critical consciousness, and responsibility.
7. **Argumentation**: Argue based on facts, data, and reliable information to formulate, negotiate, and defend common ideas, points of view, and decisions that respect and promote human rights, socio-environmental awareness, and responsible consumption at the local, regional, and global levels, with an ethical stance regarding self-care, care of the others, and care of the planet.
8. **Self-knowledge and self-care**: Knowing oneself, appreciating oneself, and taking care of one's physical and emotional health, understanding oneself in human diversity, and recognizing one's emotions and those of others, with self-criticism and the ability to deal with them.
9. **Empathy and cooperation**: Exercise empathy, dialogue, conflict resolution, and cooperation, making oneself respected and promoting respect for others and human rights, with welcoming and valuing the diversity of individuals and social groups, their knowledge, identities, cultures, and potentialities, without prejudice of any kind.
10. **Responsibility and citizenship**: Act personally and collectively with autonomy, responsibility, flexibility, resilience, and determination, making decisions based on ethical, democratic, inclusive, sustainable, and solidarity principles.

Source: National Common Curricular Base—*BNCC* (Brazil, 2018, p. 9)

education focuses on the development of orality and writing; its structural axes are play and interaction.

For Elementary Education, the document envisages that literacy should occur in the first 2 years of elementary school and the obligation to teach English from the sixth grade. For high school, the main focus of the *BNCC* is on the young person's protagonism in society, as well as on their autonomy and the world of work, in addition to the obligation of Portuguese Language and Mathematics components in all 3 years of this level of education (Brazil, 2018).

The ten competencies of the *BNCC* must be developed at all levels of education and are aligned with the United Nations' 2030 Agenda, as well as being encouraged and discussed in the foundations of entrepreneurial education. The use of appropriate methodologies can facilitate the development of such competencies.

2.2 Active Methodologies

Moran (2018) defines active methodologies as teaching strategies centered on the effective participation of the student in the construction of their own learning process, whether in a flexible, interconnected, or hybrid manner.

In Mattar's point of view (2017), active methodologies invite the student to abandon their role as a knowledge receiver and engage them in the process of constructing their own learning, assuming other roles such as creator, player, teacher, actor, researcher, and so on.

As teaching strategies, Moran (2018) highlights that the diversity of techniques should be balanced and adapted to individual and collective activities. No approach (problems, projects, design, games, narratives, etc.) can be overstated as the only strategy.

The table below (Table 2) presents some techniques and approaches proposed by the author:

The author notes that the classroom can be transformed into a privileged space in the construction of entrepreneurial solutions, regardless of available resources:

> The classroom can be a privileged space of co-creation, maker, seeking entrepreneurial solutions, at all levels, where students and teachers learn from concrete solutions, chal-

Table 2 Proposed techniques and approaches

Techniques and approaches	Description
Flipped classroom	The flipped classroom is an active strategy and a hybrid model that optimizes learning and teacher time. Basic knowledge is the responsibility of the student—with the teacher's curation—and more advanced stages involve the teacher's interference and a strong group component.
Inquiry-based learning	Involves researching, evaluating different situations and points of views, making choices, taking risks, learning by discovering, and moving from simple to complex.
Problem-based learning (PBL)	The focus of problem-based learning is researching various possible causes for a problem.
Project-based learning	It is a learning methodology in which students engage in tasks and challenges to solve a problem or develop a project that is linked to their life outside the classroom.
Scripted lessons with gaming language	Gamification is increasingly present in everyday school life, and it is an important learning path for generations accustomed to playing.

Source: Moran (2018)

> lenges, games, experiences, problems, projects, with the resources they have at hand: simple or sophisticated materials, basic or advanced technologies (Moran, 2018, p. 3).

Lopes (2017) defends exposing students to real-life situations or bringing them as close as possible to this reality through methodologies that allow students to learn by doing and solving real or reality-proximated problems. The author believes that students should not only know about entrepreneurship but also experience it.

2.3 Assessment of Learning

According to Perrenoud (1999), there are different conceptions of learning assessment because assessment is inseparable from the curriculum and thus expresses the profile of the student that the institution aims for as a desirable model in education.

Fernandes (2009) points out that there is practically a cause-and-effect situation between learning style and assessment; assessment practices are defined based on the idea of the teaching and learning process, meaning that teaching methodologies should be considered in the assessment process.

Regarding entrepreneurial education, Lopes (2017) argues that the results of its impact can only contribute to strategic decisions through an efficient learning assessment system.

Dornelas (2016), Hisrich et al. (2014), Cooley (1990), and de Rocha and Freitas (2014) present various methods to be considered for assessing entrepreneurship, whether by students' profiles, the development of entrepreneurial competencies, or even by the number of businesses opened. In entrepreneurial education, it becomes necessary to identify and select the most appropriate methodology for an accurate assessment of what is proposed to be evaluated.

Cooley (1990) presents an instrument for assessing and monitoring entrepreneurial competencies used by the United Nations Development Program (UNDP). This instrument includes:

- a) Opportunity seeking and initiative (*BOI*);
- b) Calculated risk-taking (*CRC*);
- c) Demand for quality and efficiency (*EQE*);
- d) Persistence (*PER*);
- e) Commitment (*COM*);
- f) Information seeking (*BDI*);
- g) Aims setting (*EDM)*;
- h) Systematic planning and monitoring (*PMS*);
- i) Persuasion and networking (*PRC*);
- j) Independence and self-confidence (*IAC*).

The author established a series of three behaviors associated with each of the ten competencies listed, thus totaling thirty elements capable of indicating the learning of entrepreneurial competencies.

According to Dornelas (2016), there is no magic formula to ensure the success of entrepreneurs. Identifying the possibilities of methodologies and assessment criteria that can effectively identify the development of entrepreneurial competencies is a necessity.

3 Research Method

This study adopts an empirical-descriptive approach, aiming to describe the behavior, characteristics, or functions of phenomena (Collis & Hussey, 2005). The research sought to understand the possibilities and limitations of assessing active methodologies in various levels of entrepreneurial education in the State of Alagoas. The research has a quantitative nature, oriented toward the measurement of phenomena, with data collection and analysis (Collis & Hussey, 2005).

Data collection took place between March and April 2024 and was of a primary type. The research subjects were teachers from public educational institutions in the municipalities of Arapiraca, Boca da Mata, and Jacaré dos Homens, located in the state of Alagoas, Northeast of Brazil. The selection of institutions was based on accessibility criteria.

According to estimates from the Brazilian Institute of Geography and Statistics (IBGE, 2024), the municipality of Arapiraca has over 234 thousand inhabitants, making it the second most populous city in the state. The municipality was represented in higher education by Campus 1 of the State University of Alagoas (Uneal), which offers ten undergraduate courses, including three bachelor's degrees (Administration, Accounting, and Law) and seven teaching degrees (Biological Sciences, Geography, History, Languages—Portuguese/English/French, Pedagogy, Mathematics, and Chemistry). It has a total of 86 teachers and 1054 students enrolled in 2024 (Uneal, 2024).

Boca da Mata has more than 21,000 inhabitants (IBGE, 2024) and is represented by its entire public education network. Early childhood education and elementary education are the responsibility of the municipality and comprise two and nine schools, respectively. High school education is the responsibility of the state and has only one school in the municipality.

Jacaré dos Homens was also represented by its entire public education network: two schools offering elementary education and four offering secondary education, both under municipal responsibility; and another school offering high school education, which is under state responsibility. The municipality has just over 5000 inhabitants (IBGE, 2024) (Table 3).

The research field comprised 27 educational institutions, with 11 dedicated to preschool education, another 13 attending to elementary education, 2 offering high school education, and 1 institution focused on higher education. The study population consisted of 380 teachers, of whom 150 were in preschool education, 112 in elementary education, 32 in high school education, and 86 in higher education.

Table 3 The characterization of the participating educational institutions

Municipality	Possible responses	Preschool (*EI*)	Elementary school (*EF*)	High school (*EM*)	Higher education (*ES*)
Arapiraca	Institutions	-	-	-	1
	Teachers	-	-	-	86
	Students	-	-	-	1054
Boca da Mata	Institutions	6[a]	9	1	-
	Teachers	104	76	17	-
	Students	498	2153	354	-
Jacaré dos Homens	Institutions	5[b]	4	1	-
	Teachers	46	36	15	-
	Students	180	682	267	-

[a]Source: Study data, 2024.Of these six institutions, four are crèche and require a larger number of teachers

[b]Of these five institutions, three are crèche and require a larger number of teachers

There are a total of 5190 students, distributed as follows: 678 (preschool); 2835 (elementary school); 623 (high school); and 1054 (higher education).

The data collection instrument (Annex 1) was developed based on a literature review and made available through a Google form, divided into four sections: (i) Respondents' Profile; (ii) Entrepreneurial Competencies; (iii) Active Methodologies; (iv) Learning Assessment.

4 Empirical Contributions

In order to contribute to the discussion, we sought to identify the possibilities and limits of evaluations of active methodologies, by educational level, in public educational institutions distributed across three municipalities in the state of Alagoas, in the Brazilian Northeast.

Table 4 presents the data from Block 1 of the data collection instrument regarding the profile of the study respondents. The sample (n) consisted of 180 teachers: *EI* = n 59 (39%); *EF* = n 72 (64%); *EM* = n 9 (28%); and *ES* = n 40 (47%), which corresponds to 47% of the studied population. The data are presented in relative terms, as a criterion to facilitate comparison by educational level:

The data in Table 4 reveal that early childhood education in the studied region is predominantly female, with a diverse age range; the majority have only undergraduate education. Meanwhile, primary education has the majority of its teachers being female, with a similarly diverse age range and undergraduate education being prevalent. In high school, just over half are women with a varied age range starting from 26 years, and most have some form of specialization. Higher education is also composed mostly of females, with an age range above 30 years, and most have completed a doctoral or postdoctoral course.

Table 4 Profile of respondents

Variable	Response options	*EI* (%)	*EF* (%)	*EM* (%)	*ES* (%)	Total (%)
Gender	Female	100	79	56	53	79
	Male	–	21	44	44	20
	Other	–	–	–	3	1
	Total	100	100	100	100	100
Age range	Up to 25 years	20	8	–	0	10
	26 to 30 years	19	17	11	0	13
	31 to 40 years	39	39	56	18	35
	41 to 50 years	17	26	11	35	25
	Above 50 years	5	10	22	47	17
	Total	100	100	100	100	100
Education level	Undergraduate	83	62	33	–	54
	Specialization	17	38	67	8	26
	Master's degree	–	–	–	35	8
	Doctorate	–	–	–	42	9
	PhD	–	–	–	15	3
	Total	100	100	100	100	100

Source: Study data, 2024

The data indicate that education in the studied region is predominantly provided by female teachers with a diverse age range, and there is a growing representation of age in relation to the level of education they teach. Education level also increases in relation to the level of teaching.

Block 2 of the data collection instrument sought to identify the use of entrepreneurial skills. Respondents were initially asked whether they used entrepreneurial education in their routine. Of these, 26% affirmed that they do use it in their daily lives. For those who responded negatively to this question, they were asked if they had heard about entrepreneurial education; only 44% claimed to be familiar with it.

The data indicate a divergence in the use of entrepreneurial education among teachers within the same school, educational level, and municipality. This suggests that the use of entrepreneurial education is possibly not part of the curriculum of the school system but rather the practice of some teachers. Subsequently, adapted questions (Appendix 1) were asked based on the *EntreComp* framework proposed by Bacigalupo et al. (2016) with the aim of identifying the use of entrepreneurial skills by teachers by educational level.

The data in Table 5 indicate that the respondents of the study aim to develop entrepreneurial competencies in their students as a daily practice. If we use the average development of entrepreneurial competencies proposed by Bacigalupo et al. (2016) by educational level, it is possible to affirm, based on the results, that more than 63% of teachers at all levels seek to develop such competencies. In primary education, this percentage reaches 80%.

Table 5 Entrepreneurial competencies by level of education

Areas	Competencies	*EI* (%)	*EF* (%)	*EM* (%)	*ES* (%)
1. Ideas and opportunities	1.1 Opportunity identification	64	72	56	50
	1.2 Creativity	73	78	89	63
	1.3 View	69	79	89	65
	1.4 Idea valuation	73	85	89	68
	1.5 Ethical and sustainable thinking	66	78	89	50
2. Resources	2.1 Self-awareness and self-efficacy	78	90	89	75
	2.2 Motivation and perseverance	76	92	89	88
	2.3 Resource mobilization	64	72	89	60
	2.4 Financial and economic education	41	50	56	23
	2.5 Mobilizing others	69	75	78	58
3. Actions	3.1 Taking initiative	81	94	78	88
	3.2 Planning and management	73	88	78	73
	3.3 Dealing with uncertainty, ambiguity, and risk	59	60	67	45
	3.4 Working with others	73	88	78	65
	3.5 Learning from experience	83	93	78	73
	Average	70	80	79	63

Source: Study data, 2024

The entrepreneurial competency "Taking Initiative" was the most utilized competency among primary school teachers and had the highest percentage among all. Meanwhile, the competency "Financial and Economic Education" was the least developed entrepreneurial competency by teachers at all levels of education.

In Table 6, recent data on the use of active methodologies are presented:

Regarding the use of active methodologies as pedagogical practice, the data in Table 5 indicate an average usage of 46% among responding teachers. This result supports Moran (2018) who states that the diversity of techniques should be balanced and adaptable to conditions, and also that no methodology can be considered the best strategy.

Among the levels of education, high school showed the highest usage of this type of methodology. Regarding the active methodology with the highest average usage by level of education, "observation" was the most used in high school, among all practices. If we observe the average usage of active methodologies across all levels of education, "Inquiry-based Learning" and "Group Dynamics" were the two most used. Other active methodologies were also presented, such as outdoor lessons, conversations with experts, and image reading. Next, in Table 7, the possibilities for evaluations are highlighted.

Regarding the learning criteria used among the levels of education, the results presented in Table 7 indicate a diversity of possibilities. This result supports Perrenoud's (1999) statement that there are several possibilities for evaluating learning and that it is essential to understand the desired profile of the student at each

Table 6 Active methodologies

Options	*EI* (%)	*EF* (%)	*EM* (%)	*ES* (%)	Average (%)
Play-based learning	83	60	78	13	58
Inquiry-based learning	64	68	89	65	72
Problem-based learning (PBL)	41	63	78	50	58
Project-based learning	58	51	78	63	62
Cooperative learning	69	74	78	50	68
Flipped classroom	42	36	56	30	41
Scripted lessons	51	65	78	40	58
Self-assessment	64	65	78	55	66
Peer assessment	47	53	44	23	42
Brainstorming	32	22	44	15	28
Bricolage	29	25	11	3	17
Co-assessment	39	24	22	5	22
Storytelling	76	60	33	15	46
Cooking	39	28	22	3	23
Debate	41	61	89	70	65
Group dynamics	61	68	100	60	72
Hybrid teaching	29	32	44	30	34
Case study	29	44	67	50	47
Exhibitions	25	22	33	15	24
Educational games	73	65	78	20	59
Gamification	37	35	67	15	38
Heuristics	29	14	22	5	17
Mind map	22	36	78	33	42
Hands-on activities	59	49	67	23	49
Music and arts	71	43	44	15	43
Observation	63	61	100	45	67
Portfolio	32	22	44	20	30
Business plans	20	14	56	15	26
Problem solving	29	44	89	60	56
Quiz	31	39	78	15	41
Seminars	17	24	89	60	47
Simulation	32	38	78	25	43
Average	45	44	63	31	46

Source: Data Study, 2024

level of education so that the methodology and respective evaluations are appropriate for what needs to be assessed.

Among all the learning criteria, “negotiation” had the lowest percentage of usage in all criteria and levels of education. In this study, it was not possible to verify the learning criteria by type of methodology.

Respondents were given the opportunity to indicate other evaluation criteria and the limitations for the use of active methodologies. The following were presented as

Table 7 Learning criteria

Options	*EI* (%)	*EF* (%)	*EM* (%)	*ES* (%)
Autonomy	71	81	100	63
Presentation	68	85	100	70
Application of knowledge in practice	68	82	100	73
Content mastery	63	86	100	50
Clarity of ideas	64	86	100	55
Communication	73	86	100	80
Creativity	78	86	100	73
Initiative	75	85	100	68
Leadership	75	82	100	60
Negotiation	61	58	89	40
Originality	59	71	89	58
Persistence	71	85	89	63
Persuasion	59	61	100	48
Planning	80	85	100	75
Writing quality	66	75	89	70
Resilience	66	78	100	55
Problem-solving	64	83	100	75
Teamwork	63	86	100	73
Vision for the future	76	85	100	68

Source: Study data, 2024

learning criteria: agility, attendance, punctuality, interaction, empathy, and engagement. As limitations for the use of active methodologies, the following were highlighted: (i) financial resources, (ii) classroom structure, (iii) institutional structure, and (iv) number of students per class.

Regarding the limitations of using active methodologies, one respondent noted:

> Although I am not yet very familiar with these methodologies, the few I know always seem to place the student not as a mere spectator in the teaching-learning process but as the protagonist of this process itself. So, I wouldn't say it's limiting, but it's challenging to instigate the student's critical thinking in the search for their production of knowledge. Hence the essential role played by these methodologies.

The respondent's statement highlights the perception of the importance of active methodologies in the teaching-learning process, where the student is the protagonist of their own learning process. This protagonism is fundamental in the practice of entrepreneurial education, as pointed out by Lopes (2017). Despite not being familiar with the use of active methodologies, they recognize them as a challenge, not a limitation.

5 Final Remarks

The main objective of this study was to understand the possibilities and limitations of evaluations of active methodologies at various levels of entrepreneurial education. As an empirical contribution, a data collection instrument was applied to 180 teachers from different levels of education in the state of Alagoas.

Regarding the first specific objective, which was to describe the profile of the research respondents, the data indicated that the studied educational network is predominantly composed of female teachers with diverse age ranges, increasing in representation as the level of education rises. The level of education also increases with the level of teaching.

Concerning the second specific objective, aimed at relating the use of entrepreneurial competencies, it was possible to infer that among the 15 competencies proposed in the *EntreComp* framework, the average utilization among the study's respondent teachers is at least 63% per level of education. In elementary education, this utilization rate reaches 80%.

Regarding the third specific objective, the aim was to identify the use of active methodologies by level of education. The results indicate that teachers on average (46%) use active methodologies as pedagogical practice, with high school being the most frequent level of utilization. When comparing the average use of active methodologies across all levels of education, "Inquiry-based learning" and "Group dynamics" were the two most used methodologies. "Observation" was on average the most utilized among all. Other active methodologies were also presented, such as outdoor lessons, conversations with specialists, and image reading.

In response to the overall objective of this study, it was possible to infer that there is a diversity of evaluation possibilities to be used in various active methodologies and at all levels of education. Regarding the imposed limitations, in some cases, the difficulty of using active methodologies due to scarce resources, physical space adequacy, and the number of students per class stands out.

This result indicates that despite the fact that the educational institutions used as the research locus do not have entrepreneurial education implemented in their respective curricula, teachers mostly use active methodologies to develop entrepreneurial competencies and employ various assessment strategies.

As a limitation of the study, the sample of respondents is highlighted. As possibilities for future studies, it is suggested to identify evaluation criteria by type of active methodology and by level of education. Regarding higher education, comparing evaluation criteria for active methodologies by course is necessary.

Appendix: Data Collection Instrument

Block 1—Respondent Profile

Gender: () Female () Male () Other
Age: () Up to 25 years old () 26 to 30 years old () 31 to 40 years old () 41 to 50 years old () 51 years old and above
Level of Education: () Undergraduate () Specialization () Master's Degree () Doctorate () Post-doctorate.
What is your undergraduate major? _____.
What level of education do you work in? () Early childhood education () Elementary () High school () Higher education.
At which educational institution do you work?_____.

Block 2—Pedagogical Practice

Do you work with entrepreneurial education? () Yes () No.

If the answer to the previous question was no, have you heard of entrepreneurial education? () Yes () No.

Carefully read each question and respond **Yes** or **No** to each item below. **There is no right or wrong answer**.

Areas	Competencies	How do you implement it in your pedagogical practice	Yes	No
1. Ideas and opportunities	1.1 Identification of opportunities	Do you encourage your students to use their imagination and skills to identify value creation opportunities?		
	1.2 Criatividade	Do you promote the development of creative and purposeful ideas in your students?		
	1.3. Visão	Do you foster in your students an interest in working toward their future vision?		
	1.4 Valuation of ideas	Do you motivate your students to make the most of their own ideas?		
	1.5 Ethical and sustainable thinking	Do you enable your students to assess the consequences and impact of ideas, opportunities, and actions?		

Carefully read each question and respond **Yes** or **No** to each item below. **There is no right or wrong answer**.				
Areas	Competencies	How do you implement it in your pedagogical practice	Yes	No
2. Resources	2.1 Self-awareness and self-efficacy	Do you seek to awaken in your students self-belief and ongoing development?		
	2.2 Motivation and perseverance	Do you motivate your students to stay focused and not give up on their goals?		
	2.3 Resource mobilization	Do you instill in your students the need for managing the resources they need for their goals?		
	2.4 Financial and economic education	Do you provide your students with financial and economic education?		
	2.5 Mobilizing others	Do you awaken in your students the need to integrate people, inspire, and enthuse?		
3. Actions	3.1 Taking initiative	Do you motivate your students to move forward?		
	3.2 Planning and management	Do you instill in your students the need to prioritize, organize, and monitor their goals?		
	3.3 Dealing with uncertainty, ambiguity, and risk	Do you develop in your students the ability to make decisions dealing with uncertainty, ambiguity, and risk?		
	3.4 Working with others	Do you enable your students to work in teams, collaborate, and network?		
	3.5 Learning from experience	Do you develop in your students learning by doing?		

Block 3—Active Methodologies

Carefully read each statement and respond **Yes** or **No** to the use of the **active methodology** in your daily routine. **There is no right or wrong answer.**					
Active methodologies	Yes	No	Active methodologies	Yes	No
Play-based learning			Problem-based learning (PBL)		
Inquiry-based learning			Project-based learning		
Cooperative learning			Fairs		
Flipped classroom			Educational games		
Scripted lessons			Gamification		
Self-assessment			Heuristic methods		
Peer assessment			Mind mapping		
Brainstorming			Hands-on learning		

Carefully read each statement and respond **Yes** or **No** to the use of the **active methodology** in your daily routine. **There is no right or wrong answer.**					
Active methodologies	Yes	No	Active methodologies	Yes	No
Bricolage			Music and arts		
Co-assessment			Observation		
Storytelling			Portfolio		
Cooking			Business plans		
Debate			Problem-solving		
Group dynamics			Quiz		
Hybrid teaching			Seminars		
Case studies			Simulation		

If you use other **active methodology**(ies) not listed, please describe:

Block 4—Learning Assessment

Carefully read each statement and respond **Yes** or **No** to the use of the **learning criterion** utilized, considering the use of active methodologies in your daily routine. **There is no right or wrong answer**.					
Learning criterion	Yes	No	Learning criterion	Yes	No
Autonomy			Originality		
Presentation			Persistence		
Negotiation			Persuasion		
Content mastery			Planning		
Clarity of ideas			Writing quality		
Communication			Resilience		
Creativity			Problem-solving		
Initiative			Teamwork		
Leadership			Future vision		
Application of knowledge in practice			Other		

If you use other learning criterion(s) not described, please describe:

Highlight possible limit(s) in the use of active methodologies:

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OnLIFE Entrepreneurial Education

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Abstract The relationship between education and entrepreneurship is a pressing need in the contemporary world and is increasingly present in educational agendas at a global level. With the emergence of the OnLIFE Education paradigm, which refers to an education connected to life, resulting from the hybridization of the biological world, the physical world and the digital world, it is increasingly urgent to rethink the current epistemologies and theories, which are unable to encompass the complexity of this paradigm, since they limit action only to humans, in an anthropocentric view of the world that is evidenced, above all, by instrumentalist approaches that do not consider ecosystemic relationships, made possible by the connective act. In this context, the main objective of this research is to analyze how the OnLIFE Education paradigm problematizes and reconfigures the relationships between education and entrepreneurship, based on well-founded practices that can contribute to the emergence of a new conceptual elaboration. In order to achieve the proposed objective, the research is developed based on the cartographic method of intervention research through three interconnected territories. The first refers to the literature review, the second to the theoretical intercessors, and the third to the devices. The research is based on the analysis of the emerging concepts from the literature review on education and entrepreneurship, as well as entrepreneurial skills, and investigates how the theoretical-practical devices—TARDIS Mission and Feline Project—challenge the established traditional concepts. The results of this triangulation have allowed us to understand the urgency of developing more disruptive educational

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J. Jardim (ed.), *Entrepreneurial Education in a Global and Digital World*, Studies on Entrepreneurship, Structural Change and Industrial Dynamics,
https://doi.org/10.1007/978-3-032-17008-8_9

approaches based on the concept of OnLIFE Entrepreneurial Education, which necessarily implies a profound transformation in the cognitive regime that guides education at different levels and contexts, since it proposes working with the problematization of the world, invested with a transubstantiated entrepreneurial attitude that permeates the different domains that constitute OnLIFE.

Keywords Education · Entrepreneurship · Entrepreneurial Education OnLIFE

1 Introduction

The relationship between education and entrepreneurship is a necessity for the third millennium society and is increasingly present in educational agendas at a global level. These agendas refer to both schooled contexts, at their different levels of education, and non-schooled contexts, including open and citizen schooling. In this sense, academic interest is growing, reflected in various approaches and concepts that seek to better understand this dynamic relationship. However, these different approaches and concepts are structured based on the current educational paradigm, guided by an anthropocentric and dualistic view of the world.

With the emergence of the OnLIFE Education paradigm, which refers to an education connected to life, whose teaching and learning processes originate in the problematizations of the present world and develop in new habitats that connect physical and digital spaces, human and nonhuman, in a journey of invention, there is a need to reevaluate and reconfigure the established understandings of this dynamic relationship.

In this context, this research investigates: How does the OnLIFE Education paradigm problematize and reconfigure the relationships between education and entrepreneurship? And what clues does it provide for new conceptual elaborations? The objective is to identify, from practices based on the OnLIFE Education Paradigm, elements that contribute to the emergence of a new conceptual elaboration.

In order to seek elements that help answer the questions, as well as achieve the proposed objective, the research is developed based on the rECOnective Cartographic Method of Research-Intervention (Schlemmer, 2024), from which three interconnected territories emerge. The first refers to the literature review, the second refers to the theoretical intercessors, and the third refers to the devices. The research is based on the analysis of the concepts emerging from the literature review on education and entrepreneurship, as well as entrepreneurial skills, and investigates how the theoretical-practical devices—TARDIS Mission and Feline Project (based on the OnLIFE Education Paradigm)—which provoke and enable new arrangements, challenging the established traditional notions.

The devices of the TARDIS Mission and the Feline Project Clan provide clues that allow us to develop a new conceptual elaboration on the relationship between education and entrepreneurship, promoting an ecological-connective, regenerative, and innovative perspective. OnLIFE Entrepreneurial Education thus emerges as a

response to the complex demands of a reality that is increasingly hybrid and hyper-connected, proposing a profound transformation in the way Entrepreneurial Education is inhabited in this third millennium.

2 Method

Based on the understanding that knowledge production in research is developed in a reticular and connective approach, the appropriate method for its development needs to be consistent with this approach, which highlights a problem in relation to the traditional research methods used to produce science. The challenge posed by research developed from a reticular perspective, in the connection between humans and nonhumans, is not limited to choosing a typology and a set of techniques that respond to it, but encourages us to think and question ourselves about the meaning and purpose of research and its social function. In this sense, Schlemmer (2023a, 2023b) proposes the rECOnective Cartographic Method of Research-Intervention—Reticular, Ecological and Connective, which is constituted from elements present: (1) in the Cartographic Method of Research-Intervention, proposed by Passos, Kastrup, and Escóssia (2012) and Passos, Kastrup, and Tedesco (2014), (2) in the concept of Living Labs, created in the 90s, within the scope of the research carried out by the architect William J. Mitchell of the Massachusetts Institute of Technology—MIT, and (3) in the perspective of research in reticular contexts, developed by Di Felice, Torres, and Yanaze (2012), more specifically, related to the fourth approach proposed by the authors, which refers to—Researching networks of networks and reticular ecosystems—the atopic perspective.

These elements are configured as clues that guide the investigative contexts of the research developed by GPe-dU and represent the first steps toward the construction of a method capable of guiding research, whose understanding of knowledge is based on reticular and connective epistemologies. The method refers to research in a network, constituted by the connectivity between humans and nonhumans and that produces (from the perspective of co-creation) data along the way, in a research context that is also an intervention. This is significantly different from other methodological approaches, developed from a frontal perspective, of the externality and objectivity of the human observer who collects data.

From the perspective of the rECOnective Research-Intervention Cartographic Method, the problem that gives rise to the research emerges from the problematizations that the researcher-cartographer makes when inhabiting a given context, which is configured as a research territory. In the scope of this research, the problem emerged when inhabiting different formative contexts subsidized by the OnLIFE Education Paradigm, and it is expressed as follows: How does the OnLIFE Education Paradigm problematize and reconfigure the relationships between education and entrepreneurship? And what clues does it provide for new conceptual elaborations? Based on the analysis of the concepts that emerge from/in the relationship between education and entrepreneurship, present in the literature review, as well as the

understanding of how the OnLIFE Education paradigm challenges the established concepts, the objective is to identify, from practices based on the OnLIFE Education Paradigm, elements that contribute to the emergence of a new conceptual elaboration.

Based on the problem and objective, the research is developed in the different territories that are configured along the way. The first territory is constituted by the literature review. It aims to understand the concepts that emerge from/in the relationship between education and entrepreneurship. The second territory is constituted by the theoretical intercessors that help us understand the theoretical context that can contribute to a better understanding of the research problem. The third territory is constituted by the devices—understood from Deleuze (1990) as "machines that make us see and speak." Kastrup and Barros (2012) state that a device is characterized by its capacity to break down barriers that prevent creation, and by its freedom to break free from the codes that standardize the meaning of things. "*The device tensions, moves, shifts to another place, provokes other arrangements. It is made of connections and, at the same time, produces others*" (p. 90). These connections do not follow a preestablished plan; they are formed in a field of affection where different parts can connect, without necessarily forming a whole. In this sense, connective practices that produce an effect are devices, in the case of this research, the TARDIS Mission: OnLIFE Education in diverse worlds and the Feline Project Clan, both developed in the context of the Education and Digital Transformation Seminar.

The data are produced in the context of the devices mentioned above. The interpretation and analysis are conducted considering the first and second territories that underpin the research.

3 Literature Review: First Research Territory

Conducting a literature review on the relationship between education and entrepreneurship is not a trivial matter, since the knowledge produced refers to different expressions, including: Education for Entrepreneurship, Entrepreneurial Education, Digital Entrepreneurial Education, and Entrepreneurial Digital Education.

In a search carried out on Google Scholar, for the strings in English (Education for Entrepreneurship, Entrepreneurial Education, Digital Entrepreneurial Education, Entrepreneurial Digital Education) we found in the last 10 years (2014–2024): Related to the string "Entrepreneurial Education," 20,600 occurrences, while the search for the string "Education for Entrepreneurship" returned 2990 occurrences. For the string "Digital Entrepreneurial Education," it returned 37 occurrences, and for the search for the string "Entrepreneurial Digital Education," it returned only two occurrences.

Although these concepts are interrelated, each emphasizes different aspects of the relationship between education and entrepreneurship, with a specific focus on distinct dimensions, contexts, or approaches, which are briefly presented below.

Education for Entrepreneurship: This approach understands entrepreneurship as something external to the individual and aims to prepare the individual to understand the principles of entrepreneurship. Treated as something external, it prepares the individual to acquire entrepreneurial skills so that he or she is ready to start and manage businesses. The emphasis is on preparing individuals to become entrepreneurs, either through creating their own businesses or by applying an entrepreneurial mindset to their careers. It treats entrepreneurial knowledge as something to be applied.

Entrepreneurial Education: This approach, unlike the previous one, understands entrepreneurship as a constituent element of the human being and focuses on providing individuals with an education that promotes the development of entrepreneurial skills, such as creativity, innovation, critical thinking, problem-solving, and leadership. Entrepreneurial Education can be developed in various educational contexts, including schools, universities, professional training programs, and continuing education. It treats entrepreneurial knowledge as something to be developed.

Digital Entrepreneurial Education: This approach emphasizes the integration of entrepreneurship with the digital environment. It is linked to a wide range of studies, research, and practices related to the teaching and promotion of digital entrepreneurship, especially through distance learning/education methods. It examines how digital technologies can be used to empower entrepreneurs and promote the development of entrepreneurial skills specific to the digital context, such as digital marketing, use/appropriation of online platforms, digital data analysis, and technological innovation. Digital Entrepreneurial Education recognizes the growing importance of digital technology in entrepreneurship and seeks to train individuals to succeed in this environment.

Entrepreneurial Digital Education: This approach combines entrepreneurial education with the use/appropriation of digital technologies in the educational process. It focuses on how digital technologies can be used to promote the development of entrepreneurial skills and promote entrepreneurial teaching and learning. Digital Entrepreneurial Education may involve the use/appropriation of online platforms, business simulation applications, digital educational resources, and other technologies to promote entrepreneurship.

In this search, we found that UNESCO documents (2017, 2021) refer to the term "Entrepreneurship Education" understood as a field of study and practice that aims to empower individuals with entrepreneurial skills, knowledge, and attitudes that prepare them to start and manage businesses successfully, or to be innovative entrepreneurs in different contexts. According to UNESCO, Entrepreneurship Education is not limited to providing business knowledge or technical skills, but also emphasizes the development of socio-emotional skills, creativity, critical thinking, problem-solving, and decision-making. In addition, it promotes values such as initiative, autonomy, responsibility, ethics, and perseverance. UNESCO recognizes the importance of Entrepreneurship Education not only for the creation of new ventures, but also for the economic, social, and cultural development of communities and countries. Therefore, it promotes the inclusion of entrepreneurship in formal

and nonformal education at all levels, from basic education to higher education, as well as in professional training and continuing education programs.

Considering the definitions presented above, UNESCO (2017, 2021) seems to adopt an understanding that hybridizes the concept of Education for Entrepreneurship and Entrepreneurial Education.

The European Commission first referred to the importance of entrepreneurship education in 2003, in the Green Paper on Entrepreneurship in Europe. In 2006, the European Commission had identified a "sense of initiative and entrepreneurship" as one of the eight key competences needed by all members of a knowledge-based society. The documents Small Business Act for Europe of 2008, Communication on Rethinking Education of 2012, Entrepreneurship Action Plan 2020 of 2013, and, more recently, New Skills Agenda for Europe, have maintained the need to promote entrepreneurship education and entrepreneurial learning.

Despite the great interest in this area of entrepreneurship education, almost a decade after the 2006 recommendation on "Key competences for lifelong learning," there is still no consensus on the elements that characterize entrepreneurship as a competence. As highlighted in the 2016 edition of the Eurydice Report on "Entrepreneurship Education at School," around half of the countries in Europe use the European Key Competences definition of entrepreneurship. A third of the countries use their own national definition and almost 10 countries do not have a common definition at national level. Furthermore, the lack of comprehensive learning outcomes in the area of entrepreneurship education is identified by Eurydice as one of the main obstacles to the development of entrepreneurial learning in Europe. This is why it is crucial to define and describe entrepreneurship as a competence; to develop a framework describing its components in terms of knowledge, skills, and attitudes; and to provide European citizens with the appropriate elements to effectively assess and develop this essential competence.

4 The Development of Competences in Entrepreneurship Education: The Second Area of Research

Entrepreneurial skills are the essence of a creative and innovative culture, occupying a prominent place in the performance of any human function. They are what enable us to create something original and valuable, as well as to find appropriate solutions to complex and global problems. For this reason, current challenges require the definition of skills models that correspond to the context of the networked digital society in which we live (Jardim, 2019; Jardim & Franco, 2013).

In this sense, the EntreComp—Framework of Reference for Skills for Entrepreneurship was recently developed by the Joint Research Centre of the European Union, and in recent years this office has dedicated itself to preparing reference frameworks that contribute to the development of different types of skills, which are essential for the construction of a different idea of citizenship for

contemporary society (Bacigalupo et al., 2016). An example of this is the first report published in 2013 on citizens' digital skills, DigComp, which was followed by others such as DigCompEdu in 2017, which developed a common European framework for teachers' digital skills.

These European reference frameworks for entrepreneurial and digital skills have been worked on in close coordination, with the aim of promoting and disseminating good practices and developing common policies aimed at the global growth of the European Union, in terms of entrepreneurial education.

EntreComp is a comprehensive and complete framework, consisting of three competency areas: "Ideas and Opportunities," "Resources," and "In Action." Each area includes five competencies, which together are the building blocks of entrepreneurship as a competency. The framework develops the 15 competencies through an 8-level progression model. It also provides a comprehensive list of learning outcomes, which provides inspiration and insight for those planning interventions across different educational contexts and application domains.

By producing a common definition of what entrepreneurship as a competency is, Entrecomp aims to bridge the worlds of education and work and to be used as an effective reference for any initiative that aims to foster entrepreneurial learning. The framework is a flexible source of inspiration to be used or adapted to different contexts. For example, EntreComp could inspire the reform of curricula in the formal education and training sector, the design of practical entrepreneurship experiences in nonformal learning contexts, or the development of instruments for citizens to self-assess their entrepreneurial proficiency.

As with the DigComp model, already mentioned, this framework of references for entrepreneurship is currently being adapted to an educational model that aims to understand and reinforce teaching skills for entrepreneurial learning.

In summary, EntreComp defines entrepreneurship as a transversal competence, which applies to all spheres of life: from personal development to active participation in society, (re)entering the labor market as an employee or as a freelancer, and starting new ventures (cultural, social, or commercial). It is based on a broad definition of entrepreneurship that depends on the creation of cultural, social, or economic value. Thus, it encompasses different types of entrepreneurship, including intrapreneurship, social entrepreneurship, ecological entrepreneurship, and digital entrepreneurship. It applies to individuals and groups (teams or organizations) and refers to the creation of value in the private and public sectors, third sectors, and in any hybrid combination of the three.

In Portugal, and through the action of the General Directorate of Education (DGE), Education for Entrepreneurship is part of the broader framework of education for citizenship and is recognized as a fundamental aspect of education in the process of encouraging students to develop entrepreneurial skills, to act on opportunities, to generate ideas and transform them into social, economic and cultural value for others.

The recent publication of the Education Framework for Entrepreneurship (Figueiredo et al., 2024) by the Ministry of Education in 2024 assumes the need to contribute to the pursuit of the Profile of Students at the End of Compulsory

Schooling, as well as to the development of the principles, values and areas of competence contained therein, as established in its matrix, as a reference document for the organization of the entire education system and which must be followed in the development of the curriculum. Based on this matrix, examples of areas of competence related to Entrepreneurship include Information and Communication, Reasoning and Problem Solving, Critical Thinking and Creative Thinking, Interpersonal Relationships, Personal Development and Autonomy, and Awareness and Body Control. Also noteworthy as values to be developed and put into practice and with which Entrepreneurship is articulated are Responsibility and Integrity, Excellence and Demand, Curiosity, Reflection and Innovation, Citizenship and Participation and Freedom.

Entrepreneurship is part of the National Strategy for Education for Citizenship and is one of the different domains to be equally worked on in the Citizenship and Development curricular component, from an intercommunicating perspective, based on a holistic view of the person. In the approach to the domain of Entrepreneurship, this reference is presented as a guiding document, supporting the work to be developed by schools that, within the scope of their autonomy, can use and adapt it according to the options they make, framing the practices to be developed. In this way, the Reference for Education for Entrepreneurship aims to contribute to the framing of practices and to the development of principles, values, attitudes, and skills, in accordance with the legislation in force in Portugal.

In addition to the Ministry of Education's action in this area, the Office for Education for Entrepreneurship and Citizenship (GabEEC), of which we are a member, stands out in the Portuguese context. It was created in 2008, and its main mission is to research and promote entrepreneurial culture. Part of the Infante Dom Henrique Chair (CIDH) at the Universidade Aberta, this office combines research, intervention, and evaluation as a way of ensuring the social impact of its action.

Based on theoretical models and reflective and collaborative methodologies, in the context of GabEEC, the Education Project for Entrepreneurship and Citizenship (PEEC) is currently underway, consisting of intervention programs for all levels of education, from preschool to higher education, which aims to provide new generations with entrepreneurial skills for the development of innovative business plans, not only business-related, but also social and humanistic.

In the Brazilian context, there is no single framework of reference oriented toward entrepreneurship skills, but rather, government documents and initiatives that address these skills in educational contexts, including:

The National Common Curricular Base (BNCC) establishes guidelines for the Basic Education curriculum in Brazil. These guidelines include competencies and skills related to entrepreneurship, especially in the context of high school, including critical thinking, creativity, problem-solving, communication, and collaboration, which are fundamental to the entrepreneurial spirit. It is important to note that in the BNCC, entrepreneurship is addressed as a transversal competency, emphasizing the comprehensive training of students to act proactively in different social and economic contexts. "Entrepreneurial education is encouraged so that students can

identify opportunities, create innovative solutions and develop projects that contribute to the improvement of society" (Brasil, 2018, p. 49).

The National Education Plan (PNE) is the document that defines goals and strategies for improving education in Brazil. This document mentions the importance of fostering entrepreneurial education as a means of promoting innovation and social inclusion and as a strategy for the country's citizenship formation and economic development. The plan highlights the need to include entrepreneurship in school curricula as a way of encouraging autonomy, stimulating creativity, developing communication skills, promoting students' decision-making capacity, and innovation capacity. "To encourage entrepreneurial education in basic and higher education, aiming to train individuals capable of creating and managing new businesses, contributing to the country's socioeconomic development" (Brasil, 2014, p. 26).

The National Curricular Guidelines for Professional and Technological Education (DCN-EPT) provide guidance for the development of skills that are fundamental for entrepreneurial education, especially in the context of professional and technical training. According to the DCN-EPT, entrepreneurial education is an essential part of technical and professional training and aims to train students to create and manage businesses, acting autonomously and creatively in the job market, in order to promote innovation and economic development. The document emphasizes the need to develop entrepreneurial skills, such as the ability to plan, organize, direct, and control businesses.

The National Program for Access to Technical Education and Employment (Pronatec), coordinated by the Ministry of Education (MEC), includes entrepreneurial education as one of the areas of training in technical and professional qualification courses. Its objective is to prepare students for the job market and to set up their own businesses. By highlighting the importance of developing entrepreneurial skills to increase students' employability and capacity for innovation, it offers courses and initiatives that enable them to identify business opportunities, develop business plans, and manage ventures effectively. In this way, the program encourages entrepreneurship among students in technical and professional qualification courses.

The Brazilian Micro and Small Business Support Service (SEBRAE), one of the main institutions that promotes entrepreneurial education in Brazil, although it does not formalize a specific reference framework, established in 2013 a National Policy for Entrepreneurial Education (PNEE). SEBRAE understands entrepreneurial education as the process of awakening students' interest in entrepreneurship, providing them with the tools and knowledge necessary to develop their own initiatives. The PNEE aims to promote an entrepreneurial culture from basic education to higher education. Based on this objective, it guides the inclusion of entrepreneurship in curricula and proposes the development of entrepreneurial skills, including: initiative and proactivity, planning and organization, innovation and creativity, problem solving, leadership and teamwork, autonomy and responsibility. In this sense, SEBRAE offers courses, programs, and materials that help develop entrepreneurial skills. This is an initiative aimed at public-private partnerships rather than an exclusive government document. "Entrepreneurial education aims to develop skills and

competencies that enable students to identify opportunities, innovate and create solutions to real problems, contributing to the generation of employment and income" (SEBRAE, 2013, p. 15).

Some Brazilian initiatives and institutions have also taken advantage of international documents produced by UNESCO, the European Commission (EntreComp), and the Organization for Economic Cooperation and Development (OECD), adapting the competency references for entrepreneurship to the Brazilian reality.

The documents and initiatives present in the Brazilian context reflect an integrated and multidimensional approach to entrepreneurial education. This approach goes beyond simply teaching business techniques, seeking to develop a broad set of skills and abilities in students. Rather than constituting a single reference framework to be followed, they provide an overview of the skills that are valued and promoted within the scope of entrepreneurial education in Brazil.

In this way, the documents and initiatives demonstrate the country's commitment to integrating entrepreneurship into formal education. They help to foster entrepreneurial education in Brazilian schools and universities, guiding them on how to integrate skills into curricula and educational programs. The goal is for schools and universities to develop an entrepreneurial attitude in students, preparing them for the job market and for creating new businesses, in order to contribute to the country's economic and social development.

The objective is for schools and universities to develop fundamental skills in students, preparing them for the job market and the challenges of the contemporary world, which involves innovating, creating, and managing new businesses, contributing in a significant and sustainable way to the country's economic and social development.

We present below the Tardis Mission "OnLIFE Education in Diverse Worlds," which guides the development of the Curricular Unit (UC) "Education and Digital Transformation Seminar," as well as the Feline Project Clan. Both devices make up the third territory of the research.

5 Tardis Mission and Feline Project Clan: The Devices that Configure the Third Research Territory

The TARDIS Mission "OnLIFE Education in Diverse Worlds" (Fig. 1), understood as a research device, is developed in the Curricular Unit (UC)—"Education and Digital Transformation Seminar."[1] The UC is co-created in partnership with the Universidade Aberta of Portugal and offered to master's and doctoral students of the Postgraduate programs of UNISINOS, the Universidade Aberta of Portugal, and the

[1]The UC is one of the products of the CAPES PrInt Project "Digital Transformation and Humanities: Education and Communication in Movement," created, organized and developed in a partnership between the Universidade Aberta of Portugal—UAb Portugal and the University of Vale do Rio dos Sinos—UNISINOS—Brazil.

Fig. 1 TARDIS Mission "OnLIFE Education in Diverse Worlds" *Source*: Produced by GPe-dU

institutions that are part of the Distance Education Association of Portuguese-Speaking Countries—AEaDPLP (https://sites.uab.pt/aead/). With a workload of 30 h, it is developed over 10 weeks, in the online mode, and is composed of asynchronous activities and six synchronous meetings. It implies the formation of a connective ecology (Schlemmer, 2023) constituted by a hybridism between human entities (teachers, students, and guest researchers) and nonhuman entities (Moodle Platform, Microsoft Teams Platform, Zoom-Colibri Platform, Genially Platform, Spatial Metaverse, Generative Artificial Intelligences—Gen AIs, series, characters, and different institutions).

The UC aims to: (1) analyze and problematize issues related to Digital Transformation in Education, emphasizing Online Education, Hybrid Education, and the OnLIFE Education Paradigm. (2) Study and systematize how digital transformation can promote the development of Education, especially in Portuguese-speaking countries, and how different institutions are appropriating these transformations. (3) Propose the invention of methodologies and practices in the OnLIFE Education Paradigm.

The fourth and fifth editions of the Seminar (2023/01 and 2024/01) were developed based on the PAG Inventive Methodology (Schlemmer, 2018) linked to the VersOnLIFE Inventive Methodology (Schlemmer, 2023), which gave rise to the Mission "TARDIS: OnLIFE Education in Diverse Worlds."

The "TARDIS: OnLIFE Education in Diverse Worlds" Mission guides the entire training path and begins with an immersive gamified narrative, inspired by the English series Doctor Who, initially developed on the Genially Education platform. In it, the character Doctor Who, accompanied by Violet Ladybird, Sherlock Holmes, and MacGyver, and to the sound of the series' theme, welcomes the UC participants and introduces themselves as "some of the nomadic inhabitants of the connective ecology of multiverses" (Fig. 2). In this way, the participants are invited to enter and

Fig. 2 Nomadic inhabitants of the connective ecology of multiverses. *Source*: Produced by GPe-dU

get to know the Tardis[2] (living creatures, who have consciousness and personality, who are not built, but grow). The Tardis (Fig. 3) has a Control Center, where a Temporal Rotor,[3] the Heart,[4] the Console,[5] and the Eye of Harmony are located.[6] In the Console, master's and doctoral students find: the Navigation Panel, with the UC Program—information they need to have a good journey; the Mental Panel—with the Diagnostic Assessment—a form designed to obtain information to revisit the UC plan and adapt it to better meet the participants' learning needs; the Temporal Panel—with the Schedule—so that they can organize themselves during our journey; the Synchronous Communication Panel—with the link to the platforms where the synchronous meetings will be held; the Discord Communication Panel—with the invitation to join the server where the asynchronous communications and activities take place. After getting to know the Console, the participants are invited to get to know the other spaces of the Tardis, including the Library (Fig. 4), where reading materials are made available weekly.

It is important to note that the narrative is expanded each week with new human inhabitants (living clues) and nonhumans (Fig. 5), including Metaverse platforms,

[2] It has a chameleon circuit that allows it to disguise itself as anything, however, due to defects it always looks like a police box from the 1960s. It is a ship wrapped in a breathable bubble, which allows the doors to open in space. Its system can project, on the outside, a holographic interface in the shape of a person and, on the inside, it is much larger than one might imagine.

[3] The rotor spins to lock the coordinates into the navigation system.

[4] The soul of the Tardis, made up of energy and responsible for keeping everyone in it on the same timeline as the outside environment, at the time it materializes.

[5] Main environment is piloted.

[6] An exploding star, about to become a black hole, removed from its orbit and placed in a state of permanent stasis. It is the source of energy.

Fig. 3 The Tardis. *Source*: Produced by GPe-dU

Fig. 4 Tardis library. *Source*: Produced by GPe-dU

Generative AIs (Fig. 6), and online clues (Fig. 7), which become part of the connective ecology of multiverses (Fig. 8).

Thus, the methodology involves training in ecologically connected contexts, instigating gamified experiential/living processes supported by asynchronous readings and discussions, four synchronous "conversations" sessions with researchers from Brazil and Portugal, and two synchronous "sharing" sessions between participants. During the course, participants, accompanied by different characters, are challenged to carry out the Mission "OnLIFE Education in Diverse Worlds." The mission is developed based on the organization of participants into Clans, observing the criteria of internationalization and interdisciplinarity, with the objective of providing communication, exchanges, and cooperation between different cultures and areas of knowledge.

Fig. 5 Human and nonhuman inhabitants. *Source*: Produced by GPe-dU

Fig. 6 Metaverse platforms and Gen AIs. *Source*: Produced by GPe-dU

The "TARDIS OnLIFE Education in Diverse Worlds" Mission consists of: choosing an educational context and, based on an exploratory and experiential journey through metaverses and Generative Artificial Intelligence (IAGen), linked to different digital technologies and, supported by online clues made available weekly on Moodle, as well as by discussions with researchers in the field, inventing a pedagogical practice within the scope of the OnLIFE Education Paradigm, whose objective is to contribute to the context of Education and Digital Transformation. The material produced in each clan is shared in a channel created on Discord and, later, discussed in a synchronous session. This material is part of the "Education and Digital Transformation: OnLIFE Education in Diverse Worlds" series.

Fig. 7 Online tracks. *Source*: Produced by GPe-dU

Fig. 8 Connective ecology of multiverses. *Source*: Produced by GPe-dU

The development of the TARDIS Mission: OnLIFE Education in Diverse Worlds, during the two editions of the seminar, resulted in several pedagogical practices within the scope of the OnLIFE Education Paradigm. As a device, we bring to the context of this article the Feline Project Clan.

The Feline Project Clan was made up of two Portuguese teachers (one a specialist in Computer Science and the other in Mechanical Engineering, who work in high school) and two Brazilian teachers (one a specialist in teaching English and Portuguese in elementary school and the other in Physical Education, with a focus on swimming). Two of these teachers (one from Brazil and one from Portugal)

introduced the others to ConectaKaT,[7] an open and citizen education initiative, established as a Hub of the OnLIFE International Education Network,[8] of which they have been a part since 2022. Mobilized by this initiative, ConectaKaT was chosen as the educational context in which the TARDIS Mission would take place. This choice gave rise to the name Feline Project (in Portuguese, "Projeto Felino"), attributed to the Clan. Once the context was defined, the four teachers began exploring ConectaKaT, with the aim of learning about the different actions that constitute it and identifying possibilities for expanding them, in order to promote a greater scope of the Network. Along the way, they chose to develop the TARDIS Mission, linked to the Tom KaT in Schools action.[9]

The Feline Project[10] involved a process of co-creation of an immersive space in metaverses, in partnership with different Gen AIs, platforms, and digital technologies.

It was initially developed with Spoke (Mozilla Hubs), based on the adaptation of one of the templates provided. The model was exported and included in the Spatial Metaverse and is organized into four environments:

Immersive Room of the Feline Clan—My School at ConectaKaT (Fig. 9). In this space, there are four panels, referring to the four schools in which the members of the Clan work. Each of the panels is made up of videos or images (co-created with the Gen AIs), with the activities that Tom Kat learned in each of the schools: (1) cutting and welding metals, in addition to learning about different equipment and techniques, interpreting technical drawings, and following the safety standards required to obtain a welding certification. (2) diving into the pool and learning to swim. (3) learning a few words in the English language. (4) meeting a hamster, Speedy, adopted, as part of a project called "Geração TOP—cuida de ti, cuida dos outros."[11]

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[7] Created on July 1, 2020, ConectaKaT is an international network that connects children and adolescents in different parts of the world, with the aim of enhancing ecological-connective, inventive and responsible protagonism in the co-creation of Digital Citizenship experiences in the OnLIFE Education Paradigm. It is a network constituted and coordinated by a group of children, adolescents, parents, teachers, and researchers from different regions of Brazil and also abroad, linked to RIEOnLIFE. The "KaT" present in the Hub's name refers to "Kids and Teens," an expression commonly used in other initiatives of the International Group for Research in Digital Education (GPe-dU). However, due to the sound, the children and adolescents of ConectaKaT associated the word "cat" in English, referring to the idea of a cat. Thus, the KaT co-created Tom KaT, the main character who characterizes ConectaKat. This also inspired the clan name—"Feline Project," referring to the main character of ConectaKat, who is a cat. Schell, Cleto, and Schlemmer (2024).

[8] The OnLIFE International Education Network—RIEOnLIFE is a network created and organized by the International Digital Education Research Group (GPe-dU) of UNISINOS/CNPq, in collaboration with the Universidade Aberta of Portugal (UAb-PT).

[9] The Tom KaT in Schools action aims to understand the reality of different schools in Brazil and abroad, based on what is significant for students and teachers, as well as to publicize and expand ConectaKaT.

[10] This constitutes the device analyzed in this article.

[11] The project's purpose was to care for others, so the class was organized into groups to care for the hamster on a weekly basis. The project continued, focusing on mental health, with the students recognizing the role of animals in helping to overcome and prevent mental problems.

Fig. 9 My school on ConectaKaT. *Source*: Produced by GPe-dU

Fig. 10 ConectaKaT portal. *Source*: Produced by GPe-dU

ConectaKaT Portal (Fig. 10), when accessing the portal, it is possible to learn a little more about the ConectaKat Hub, as well as travel with Tom Kat to schools, through a map co-created on "Google Maps." The proposal is to get to know other schools and places, as well as to make known new schools and places that may become part of ConectaKaT, thus expanding the number of geolocated points on the map and, consequently, the Network.

Art Gallery Portal (Fig. 11), when entering the portal, it is possible to view some images co-created with different Gen AIs. Visitors can also read an e-book "Projeto Felino" (Fig. 12), which tells the narrative of Feline Project, co-created with Chat

Fig. 11 Art gallery portal. *Source*: Produced by GPe-dU

Fig. 12 Feline project e-book. *Source*: Produced by GPe-dU

GPT. The narrative begins by contextualizing the story of Tom Kat,[12] the main character of ConectaKaT, and tells his adventures in each of the schools he visited in Brazil and Portugal, as well as the experiences and learning he had there (learning to weld, swim and surf, learning English and meeting the hamster Speedy and the project inspired by him), thus enabling more people to get to know these schools and the work carried out by the teachers. Then, he invites people to participate in the IV International Congress of RIEOnLIFE and the XIII We Learning With Cibricity Festival and, finally, to participate in the artistic challenge, on the "Art Gallery" portal, where they are invited to co-create, with the Gen AIs or different TDs, works of art. In this context, the co-created image is requested to highlight a situation in which Tom Kat carries out some activity at the school or in the visitor's location. The art in the e-book, and some available in the gallery, was co-created with AI Gen

[12] See more at: https://conectakat.com/tom-kat-2/.

Fig. 13 IV RIEOnLIFE and VIII WLC. *Source*: Produced by GPe-dU

(text to image): Skybox AI, Bing Image Creator, and Canva. Images of the immersive rooms co-created in Spatial were also used, and some 3D objects imported from the Sketchfab website were added.

Finally, there are the spaces modeled for online participation in the IV International Congress of RIEOnLIFE and VIII International Festival of We, Learning with the Cibricy (WLC)—The Inhabitation of Teaching and Learning in times of Intelligent Ecologies (Fig. 13). There is a portal that transports to the conference room, where it is possible to follow the event synchronously.

In this way, by inhabiting the co-created space and accessing the narrative, you can learn more about Tom KaT and ConectaKaT, as well as view and explore Tom KaT's adventures in these schools and even participate in an event. This allows you to not only publicize the work developed in each school, but also expand the ConectaKat Network.

The Feline Project Clan was developed in the months of April, May, and June 2023 in four synchronous meetings, through the Spatial metaverse, and many hours of asynchronous work, through the channel assigned to the clan, on the Discord platform.

It is important to note that the co-creation path of both the TARDIS Mission and the Feline Project Clan (both devices analyzed in the text) highlighted the clues that configure the rECOnective Cartographic Research-Intervention Method itself. From its cartographic characteristic in the sense of following a path that is also an intervention in a given context or contexts (in this case formal education at different levels and open and citizen education); through its constitution as a living laboratory, co-created with humans and nonhumans, to its reticular and connective nature that, in an atopic dwelling, forms connective ecologies.

The analysis of the devices highlights some clues that help us identify elements that contribute to the emergence of a new conceptual elaboration within the scope of the relationship between Education and Entrepreneurship:

- The impossibility of thinking about the relationship between Education and Entrepreneurship disconnected from the digital.
- The understanding of technologies and platforms as a habitable condition for entrepreneurship.
- The orientation based on the problematization of the world, in the present time, invested with an entrepreneurial attitude that permeates the different domains that constitute OnLIFE life, instead of predefined content.
- The training not of entrepreneurial individuals, in a human-centered approach (teacher or student) or even instructional, content-based, based on the subject-object binomial, but training in ecologically connected contexts that co-generate humans (teachers, researchers, managers, students,) and nonhumans (organizations, schools, universities, different technologies and digital platforms, including metaverses and Gen AIs…) in a networked entrepreneurial attitude.
- The way in which different territories are configured and reconfigured in a hybridism of spaces, times, technologies, presences, languages, cultures, modalities.
- The development of skills, which, based on a logic that separates entrepreneurial skills and digital skills, proposes the co-generation of these skills in a network, with specific skills in the areas in which the entrepreneurial attitude is evident.
- Within the scope of network skills, the following stand out: problematization, computational thinking, ecological-connective thinking, ecosystemic thinking, and invention, in addition to those presented in the document.
- The development of training in ecologically connected contexts, which have the power to instigate processes of entrepreneurial co-creation/invention, in a network, in a regenerative ecological-connective perspective between human-nature-technologies.
- The power that artificial intelligences co-engineered with human intelligence, in co-creation processes, can bring to the scope of an Entrepreneurial Education that favors the emergence of hyperintelligences (Lovelock, 2019).

These articulated clues, which emerged from the analyses of practices based on the OnLIFE Education Paradigm (devices), not only problematize and contribute to reconfiguring the relationships between education and entrepreneurship but also provide elements that point to the emergence of a new conceptual elaboration, which we dare to call OnLIFE Entrepreneurial Education.

6 OnLIFE Entrepreneurial Education

Thinking about the relationship between education and entrepreneurship in the third millennium implies the digital, since living, working, learning, and teaching are increasingly intertwined with different technologies, platforms, artificial intelligence, and sensors connected by digital networks. It also implies, in addition to the Sustainability Goals—SDGs (UNESCO, 2017), regenerative sustainability, which proposes not only preserving, but also regenerating and revitalizing natural,

social, and economic systems. In other words, restoring and improving the health and vitality of the ecosystems and communities that make up our planet. This points to the need for ecological-connective thinking and, therefore, for a new paradigm in Education, which we have called the OnLIFE Education Paradigm (Moreira & Schlemmer, 2020; Schlemmer, 2020; Schlemmer & Moreira, 2020; Schlemmer et al., 2020). It is in this context that we refer to OnLIFE Entrepreneurial Education.

OnLIFE Entrepreneurial Education is not limited to preparing people for the challenges and opportunities of entrepreneurship in the digital world, but rather to developing the skills needed to identify online business opportunities, develop digital marketing strategies, use data analysis tools, and understand the legal and ethical aspects of entrepreneurship in the digital age, among other aspects. It involves a profound transformation in the paradigm and cognitive regime that guides Education at different levels and different contexts, since it proposes to work with the problematization of the world, in the present time, invested with an entrepreneurial attitude that permeates the different domains that constitute OnLIFE life. In this way, it not only permeates but also requires interdisciplinary and supradisciplinary articulation, in connection with the hybridization of the world embedded in a perspective of regenerative sustainability.

Therefore, it is not limited to courses, workshops, training programs, practical projects, and other learning activities that focus on the development of entrepreneurial skills in a digital and sustainable context. An OnLIFE Entrepreneurial Education implies a way of understanding and being in the world, in an inventive way, from a regenerative perspective and socially committed to a world that is becoming hybrid and onlife. Understanding that the social is not only constituted by humans, but also by nonhumans (Di Felice, 2017; Latour, 2012; Serres, 1990), from a network perspective, which encourages us to an ecological-connective thinking that connects different intelligences, enhancing the emergence of hyperintelligences (Lovelock, 2019).

This educational approach, in addition to recognizing the growing importance of digital technology in the economy of this third millennium, seeks to form not individuals, but entrepreneurial connective ecologies (Schlemmer, 2023) to be inhabited. By inhabiting them, the human, now understood as the infovidual (Di Felice, 2020), transforms itself into congruence with this ecology, enabling co-creation, invention from an ecosystemic perspective. Thus, it is not simply a question of equipping students with the knowledge, skills, and attitudes needed to succeed in this constantly evolving environment, but of providing OnLIFE Entrepreneurial Education environments that allow them to understand themselves as one more constituent entity of this co-world in connective movement.

By combining concepts of entrepreneurship and regenerative sustainability with specific knowledge of technologies, platforms, and digital networks, in the face of the challenges of living in a hyperconnected society, OnLIFE entrepreneurial education aims, based on the problematization of the world, in the present time, to instigate processes of entrepreneurial co-creation/invention, in a regenerative ecological-connective perspective between human-nature-technologies.

Thus, we understand that both the TARDIS Mission and the Feline Project Clan, devices analyzed in this study, are configured as an OnLIFE Entrepreneurial Education proposal, since:

- Both are constituted as an invention of methodologies and pedagogical practices that emerge from the problematization of the world in the present time.
- They are developed from the perspective of training in ecologically connected contexts, co-generating humans and nonhumans in an inventive path.
- They articulate a network of skills that configure OnLIFE Entrepreneurial Education.
- They provide elements for us to think about the constitution of inventive ecosystems of OnLIFE Entrepreneurial Education, instead of separating the different types of entrepreneurship: intrapreneurship, social entrepreneurship, ecological entrepreneurship, and digital entrepreneurship.

7 Conclusion

Although each of the concepts previously explained has its due place when we address the relationship between education and entrepreneurship, this relationship, when considered in the third millennium, implies understanding the transformations that mark our time, as well as the challenges that emerge from it. These transformations, caused by the accelerated process of digitalization, algorithmization, datafication, and sensorization of the world, which, enhanced by the expansion of connectivity and artificial intelligence, produce new, hybrid, hyperconnected realities in a society that is increasingly becoming more onlife. This has required not only changes in education and in the way of doing business, but a process of transubstantiation and metamorphosis of both and the relationship between them.

It is this context that allows us to understand that the approaches previously explained do not address the problems that shape this third millennium and, consequently, the challenges that emerge from it. Thus, we propose the concept of OnLIFE Entrepreneurial Education.

OnLIFE Entrepreneurial Education implies a profound transformation in the paradigm and cognitive regime that guides Education at different levels and contexts, since it proposes to work with the problematization of the world, in the present time, invested with a transubstantiated entrepreneurial attitude that permeates the different domains that constitute OnLIFE life. In this way, it not only permeates but demands interdisciplinary and supradisciplinary articulation, in connection with the hybridization of the world and the multiple realities that emerge, embedded in a perspective of regenerative sustainability.

It is through OnLIFE Entrepreneurial Education processes that we understand it is possible to drive sustainable and regenerative economic development, thus provoking effective social transformation.

Finally, returning to the questions of this study, it is possible to say that: Based on the understanding of the concepts that emerged from the relationship between education and entrepreneurship, of the entrepreneurial skills identified in the documents and initiatives, articulated with the analyses of the practices based on the OnLIFE Education Paradigm, which configure the devices of this research, the clues found and presented previously, not only problematize and reconfigure the relationships between education and entrepreneurship, but also provide elements that allow us to develop a new conceptualization, which we call OnLIFE Entrepreneurial Education, thus achieving the objective initially proposed.

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Network for Entrepreneurship and Connectivity Between Students and Professionals: Exploring Vocational Education as a Possible Path

Josefa Sônia Fonseca, Cristiane Nunes, and Antonio Vico Mañas

Abstract This chapter examines the intersection of vocational education and network entrepreneurship, focusing on how the "S" System in Brazil facilitates connections between students and the job market, with particular emphasis on the role of the National Commercial Apprenticeship Service (Senac). The aim is to investigate how vocational education can contribute to building entrepreneurial networks and enhancing connectivity between students and the market. The methodology adopted involves an exploratory approach, focusing on literature research and case analysis, aimed at understanding the strategies and programs implemented by the institution under study. Regarding the theoretical background: Castells. (2022). *A sociedade em rede*. Paz e Terra; Law No. 9841/1999, which establishes the Microenterprise and Small Business Statute and provides for differentiated, simplified, and favored legal treatment. As discussed more comprehensively in the final considerations, we can highlight the significant contribution of Vocational Education not only in developing relevant skills for individuals both personally and professionally, but also in promoting social inclusion and facilitating students' access to professional networks and business opportunities. This underscores the vital role of public policies and educational initiatives focused on entrepreneurship as a strengthening agent within the country's entrepreneurial ecosystem.

Keywords Education · Network · Market · Entrepreneurship

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J. Jardim (ed.), *Entrepreneurial Education in a Global and Digital World*, Studies on Entrepreneurship, Structural Change and Industrial Dynamics,
https://doi.org/10.1007/978-3-032-17008-8_10

1 Introduction

This research paper discusses an exploratory study in which the authors aim to enhance ideas using a case study of a network that promotes entrepreneurship, known as the "S" System, through a literature review and analysis. The "S" System, established in 1942, comprises a network of institutions dedicated to training individuals involved in industry, commerce, agriculture, and supporting small and medium-sized enterprises. This system is funded by companies in the corresponding sectors.

The "S" System, which includes entities such as Sesi, Senai, and Sebrae, is primarily funded through mandatory contributions from companies (CNI, 2023). In 2023, the "S" System collected approximately R$80 billion (TCU, 2023). It is worth noting that companies are obliged to contribute, even if they do not use the services (Sesi, 2023). There has been criticism regarding the lack of transparency and the political exploitation of resources within the "S" System (Senac, 2023).

For this study, it will not be necessary to examine the major changes that have occurred in societies since the Industrial Revolution, as the significant social and business transformations resulting from technological advances are already evident. To begin our reflection on "Entrepreneurship networks and their connectivity between students and professionals," we chose the late 1990s as our reference point. This period marked a significant expansion and popularization of technologies in Brazil. Specifically, we analyzed the role of the National Trade Apprenticeship System (Senac) as a key player within the "S" System network.

The 1990s witnessed significant advancements in data processing and storage, enhanced connectivity and interaction among networked computers, and other technological developments. These included the creation of systems and machines designed to streamline and simplify human tasks. Key areas of progress were process automation, robotics for quality improvement, and automated decision-making.

Thus, the entrepreneurship network and its connections between students and professionals are shaped by social and technological changes, including the widespread adoption of the internet and digital technologies. These advancements have automated processes and introduced new business models, redefining the job market and business practices. This situation has required the development of new skills and competencies, as adaptability, creativity, critical thinking, problem-solving, and mastery of digital tools are now essential for professional success in the constantly evolving job market (Word Economic Forum Geneva, Switzerland, 2010).

In this context, the role of the "S" System is to enhance professional qualifications by offering training courses and programs aimed at facilitating entry and reentry into the job market, as well as promoting entrepreneurship. This is made possible by adapting to new demands, diversifying the range of courses and programs offered to meet the needs of various audiences, including young people, vulnerable groups, adults, and professionals looking to update their careers.

Entrepreneurship networks have emerged as a driving force in today's socio-economic landscape, connecting students, professionals, companies, and educational institutions in an environment conducive to collaboration, knowledge exchange, and the development of new projects. This interconnection, made possible by digital tools, opens up a range of opportunities for individual and collective growth.

All the technological developments have been and continue to be of great importance to the significant transformations in global society. According to Melvin Kranzberg (1967), the historical record of technological revolutions shows that they are characterized by their pervasiveness, meaning they penetrate all areas of human activity. They are not merely an external source of impact but rather the framework within which that activity occurs.

In a similar vein, Castells (2022) argues that the defining feature of the current technological revolution is not merely the centrality of knowledge and information, but rather the application of this knowledge and information to generate knowledge and create devices for processing and communicating information, thereby creating a cumulative feedback loop between innovation and its use.

From this perspective, the dissemination and creation of new technologies enhance and amplify the capabilities of their users, who not only use but also continuously refine them, not merely as tools, but as evolving processes, because in this context, human intelligence directly drives production.

Thus, all the knowledge generated daily is disseminated in real time, which is made possible only by the development of the internet. In this context, communication and business networks expand, creating thousands of opportunities across different sectors of knowledge and business. Global networks facilitate exchanges, connecting individuals, "groups, regions, and countries, according to their relevance in achieving the objectives processed in the network, in a continuous flow of strategic decisions".

In this way, networks are structures in which several individuals maintain various types of relationships, such as friendship, business, and networking, all united toward common goals.

Castells defines a "network" as a set of interconnected "nodes." As Castells (2022, p. 101) puts it, "[…] The universality of digital language and the sheer logic of communication system networks have created the technological conditions for global and horizontal communication." Additionally, a network consists of individuals or organizations interconnected through various types of relationships.

Despite the proven efficiency of technologies, their crucial usefulness became even more evident during the COVID-19 pandemic, when the world limited interpersonal contact and transactions had to be conducted remotely. It was a time when societies either adapted to new technologies or were left behind, unable to participate in the processes essential for survival.

In the context of COVID-19, creativity and innovation were essential for companies to survive. In this regard, entrepreneurship became a collaborative means of pooling resources and strategic knowledge to find common goals. With this networked approach to entrepreneurship, which emphasizes forming connections and

partnerships, entrepreneurs have expanded their ecosystem(s) through business partnerships, cooperative networks, franchises, and more.

The connection between entrepreneurship and networking is essential for establishing a feedback ecosystem. Networks play a crucial role in the business world, whether they are social, professional, or commercial. They provide opportunities to network, share knowledge, seek mentorship, find partners and clients, and receive emotional and technical support.

For entrepreneurs, networks can provide valuable insights, access to resources, potential investors, and help in building a solid personal and business brand. Through networking, they can expand their reach, capitalize on new business opportunities, and receive valuable feedback for the growth of their organizations.

The ability to build and maintain a strong network is often seen as a competitive advantage in the business world, and many successful entrepreneurs attribute part of their success to the connections they have made over time.

Thus, entrepreneurship in networks offers several benefits, including quick access to resources such as knowledge, technology, innovation, capacity building, and capital. It also facilitates risk reduction through shared experiences with partners and can mitigate risks and negative impacts, as the network provides support for common challenges. Another important benefit is the strengthening of the brand, which is enhanced by associating with other reputable and credible brands.

Despite the many benefits mentioned above, network entrepreneurship also presents challenges. One significant challenge is maintaining a shared vision, which is crucial for the success of the collaboration. Peter Senge (1999, p. 46) states, "a shared vision stimulates commitment to the long term." Another challenge is building and maintaining solid relationships.

Zygmunt Bauman, a renowned Polish sociologist, has explored the fluid and changing nature of human relationships in contemporary society in his works. He argues that due to the fluidity and instability of modern relationships, it is crucial for people to invest in building and maintaining solid and meaningful connections.

Bauman (2021) notes that in a world marked by rapid change and superficial interactions, social ties tend to be more fragile and ephemeral. In this context, building solid relationships requires time, dedication, and effort on the part of the individuals involved.

Based on Bauman's perspective on the importance of building and maintaining solid relationships, it is crucial to cultivate genuine connections based on trust, dialogue, and mutual support. These form the deepest and most essential ties for navigating the uncertainty and volatility of modern life, providing emotional support, security, and a sense of belonging.

In this context, it can be said that immediacy is not suitable for network entrepreneurship. It is necessary to manage expectations, align interests, develop effective and rapid communication among network members, and efficiently handle challenges. Network entrepreneurship is a powerful strategy that can enhance the development of individuals, as well as the local and national economy.

One of Senge's main ideas is the importance of building "learning organizations," where the ability to learn and adapt is considered essential for long-term

success. By linking the author's ideas to entrepreneurship and network building, we can emphasize the importance of establishing networks for learning and collaboration. Entrepreneurs can benefit from applying organizational learning principles to their own structures by seeking opportunities to share knowledge, learn from others, and adapt their strategies based on feedback and shared experiences.

In other words, networks can serve as environments that promote systemic thinking and shared vision. By integrating organizational learning with networking and entrepreneurial practices, entrepreneurs can create environments that foster innovation, growth, and long-term sustainability.

The essence of entrepreneurial networks lies in collaboration. Through interaction among the different members, the sharing of knowledge and experience becomes a reality, driving innovation and the creation of effective solutions to market challenges. This mutual exchange of information and perspectives enriches the learning environment and contributes to the development of more robust and sustainable projects.

2 Revisiting the Theoretical Foundations of Entrepreneurship

The review of the theoretical foundations of Network Entrepreneurship will provide theoretical support for this research. From this review, we can understand the current state of affairs on the subject. Therefore, we will start this Review by listing the works (articles, books, legislation, etc.) in order of their importance:

- *Desenvolvimento de Políticas Públicas de Fomento ao Empreendedorismo em Estados e Municípios.* (2012). Organized and published by Fundação Getúlio Vargas, Center for Public Administration and Government Studies, and the Center for Entrepreneurship and New Business. São Paulo. The work results from a case study on the entrepreneurial environment in the states of Santa Catarina and Minas Gerais.
- Dolabela, F. (2023). *Pedagogia empreendedora.* Editora de Cultura. The book proposes a method for developing a culture of entrepreneurship in children within the Brazilian context.
- Dornelas, J. C. de A. (2008). *Empreendedorismo: Transformando ideias em negócios.* Elsevier. It adopts a historical approach to entrepreneurship, analyzes opportunities, and includes case studies of successful entrepreneurs.
- Filion, L.-C., & Dolabela, F. (2007). *Boa ideia! E agora?* Editora Cultura.
- Frigotto, G. (2001). Educação e trabalho: Bases para debater a educação profissional emancipadora. In *Anais do II encontro estadual das escolas técnicas*. Porto Alegre, Vol. 1, Year 1, Special Edition. Frigotto's text critiques neoliberalism and its relationship with the state, contextualizing the crisis of wage labor in capitalism within an ontological framework.

- GEM—Brazil. (2023). *Global entrepreneurship monitor. Empreendedorismo no Brasil.* Executive Summary 2023. IBQP.
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- Mintzberg, H., & Jorgensen. (1995, January). *Una Estrategia Emergente para la Política Pública.* En Gestión y Política Pública, *IV* (1).

In the book, the authors note that in the public sector, the concept of public policy is analogous to the concept of strategy in the private sector; that is, public policies are future-oriented plans or guides for action. According to the authors, these processes originate from a rational model where knowledge precedes action and have thus been institutionalized into distinct phases: first "formulation" and then "application." They view public policy as the state in action.

- Lundström, J. A., & Stevenson, L. (2005). *Política de empreendedorismo: Teoria e prática.* Em Estudos Internacionais em Empreendedorismo. Springer.

In entrepreneurship studies, the work of Lundström and Stevenson (2005) gained prominence for exploring the state of the art of research on entrepreneurship policies, as well as presenting a framework of analysis that takes into account the focus of the policy, framing them in six different categories, namely: (1) promoting an entrepreneurial culture; (2) entrepreneurial education; (3) reducing barriers to entry and exit; (4) financing; (5) entrepreneurial support; and (6) support for specific groups.

- Jardim, J., & Franco, J. E. (2019). *Empreendipédia: Dicionário de educação para o empreendedorismo.* Porto: Gradiva.

It is a pioneering work, the first designed for the Portuguese-speaking audience. It offers a comprehensive overview of concepts, theories, movements, works, individuals, and organizations associated with promoting education and fostering an entrepreneurial culture and mindset.

- Brasil. (2014). *National education plan (PNE 2014–2024)*. Ministry of Education.

3 Methodological Approach

The research presented here is based on the following question: "How can vocational education contribute to the development of entrepreneurial networks that connect students with the market?"

To address this question, we classified the research as exploratory. This approach enables the researcher to engage more deeply with the subject matter, enhancing familiarity with the topic under investigation. According to Gil (2022, p. 41), "the main objective of this research is to refine ideas or uncover insights. Its planning is therefore very flexible, allowing for a wide range of aspects of the subject under study to be considered." In terms of methodology, this is a bibliographic study that employs a case study approach and uses secondary data sourced from institutions such as the Global Entrepreneurship Monitor, the Brazilian Institute of Geography and Statistics (IBGE), and the institution that is the focus of this study.

The first phase of the study involves a literature review where we contextualize entrepreneurship in Brazil. We then examine professional education and its connection to the market, and finally, we analyze the Senac institution as a specific case study.

4 The Context of Entrepreneurship in Brazil

The business environment in Brazil has always been closely tied to government actions. It creates and removes incentives, imposes barriers, and either encourages or discourages entrepreneurial activities. With each era or government, policies aimed at business development change according to the prevailing ideology. Nevertheless, the entrepreneurial ecosystem has been a central theme in global economic discussions due to its ability to generate wealth widely and effectively.

The 2022 Executive Report from the Global Entrepreneurship Monitor indicates that 27 million people in Brazil are directly involved in entrepreneurial activities. Despite the COVID-19 pandemic causing many large companies to close their doors, the number of small entrepreneurs who saw opportunities to start new businesses increased significantly compared to 2021. This indicates a substantial number of Brazilians who seized the chance to meet market demands arising from the newly established situation. Figure 1: The growth of small businesses, as detailed below, confirms the significant expansion of Brazilian entrepreneurship, which notably contributes to the Brazilian Gross Domestic Product (GDP) by 27.5%.

These figures highlight the importance of the sector, which not only boosts the economy but also helps prevent or minimize internal migration. However, the GEM Executive Report highlights two concerning issues: firstly, the majority of ventures are initiated by men; and second, the low level of education among entrepreneurs. Only 11.4% of entrepreneurs have completed higher education. The largest group of entrepreneurs, forming the base of the pyramid, consists of 40.2% who have completed secondary school. A total of 18.2% have completed elementary school, and 30.2% have not completed elementary school.

Based on this statistic, we can infer that there is a significant mismatch between the success of entrepreneurship and both formal and entrepreneurial education. Although entrepreneurial education has gained importance in recent years, when

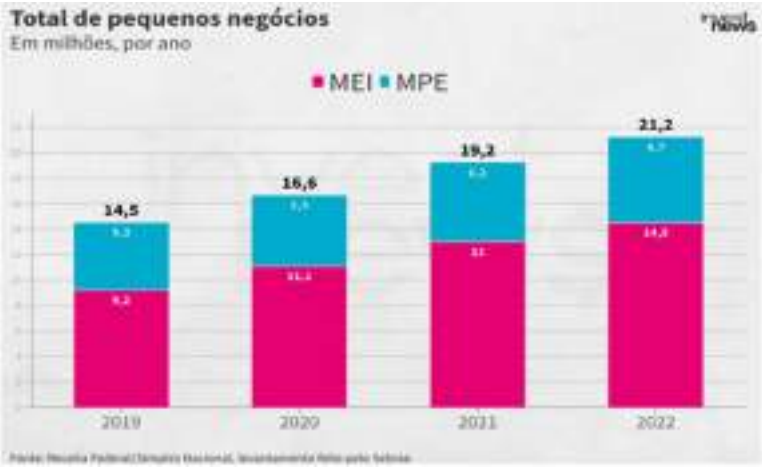

Fig. 1 Small business growth

developed intentionally only by a few institutions, it is insufficient to reduce the failure rate of small businesses.

Entrepreneurial education should be established as a public policy by the State, serving as a tool to aid national development and to foster individual growth. Only through coordinated and comprehensive government actions will it be possible to bridge the gap between education and the success of entrepreneurship as a strategy for social and economic transformation.

In the State of Bahia, for example, initiatives promoting entrepreneurship are being supported by the State Secretariats for Education, Science, Technology, Innovation, and the Secretariat for Labor, Employment, Income, and Sport. These three secretariats have been providing resources to the community by issuing calls for proposals to support initiatives, such as: Economia Solidária; Projeto Plantando Sonhos; Primeiro Emprego; Bahia + Inovadora; Cidade mais Inovadora, Cidade Inteligente, and many other projects aimed at developing individuals, businesses, and the region.

Other institutions nationwide are promoting Entrepreneurial Education and entrepreneurship, fostering a network of business education. The "S" System in Brazil consists of a group of organizations primarily focused on training and promoting the development of workers across various economic sectors. These entities are known by this name because many of their names start with the letter "S," such as (a) National Industrial Apprenticeship Service—Senai; (b) National Commercial Apprenticeship Service—Senac; (c) National Rural Apprenticeship Service—Senar; (d) Social Service of Commerce—Sesc; (e) Social Service of Industry—Sesi; and (f) Brazilian Micro and Small Business Support Service—Sebrae.

Each of these organizations operates in a specific area and offers a variety of courses, programs, and services focused on professional training, education, health, culture, sports, and leisure. The "S" System plays a crucial role in training and

enhancing the skills of professionals across various sectors, thereby contributing to the country's economic and social development.

From this perspective, vocational education in Brazil has been fostering a connection between students and the workplace, as we will explore below.

4.1 Vocational Education in Brazil as a Bridge to the Job Market

Education for work is not a modern concept. In the eighteenth century, the Marquis of Pombal, aiming to boost Portuguese trade and its colonial economy, including that of Brazil, established monopoly companies staffed with skilled merchants to train businessmen for commercial roles. The so-called "Trade Classes" were intended to modernize trade and were formalized by the Decree of September 30, 1755, which established the "Board of Trade."

Vocational education for tradespeople was quite common in Europe in the mid-eighteenth century and is considered one of the earliest European vocational education initiatives (Tales, 2012). Later, the Prince Regent, who would become King João VI, established the College of Factories in 1809, shortly after the lifting of the ban on manufacturing industries in Brazil. From the 1840s onwards, ten Houses of Educators and Artisans were established in the capitals of the provinces, the first of which was in Belém do Pará. These institutions were primarily intended to serve abandoned minors, with the goal of "reducing crime and vagrancy."

The Imperial Decree of 1854 also established special institutions for orphaned and abandoned minors, known as "Asilos dos Meninos Desvalidos." Here, they received basic education before being placed in public and private workshops under apprenticeship contracts overseen by the Orphans' Court (Senac, 2015).

In the case of Senac, the institution was founded in 1946 with the commitment to organize and offer commercial professional apprenticeship programs, and currently serves young people aged 14–24. As part of Senac's educational initiatives, the courses designed for these young individuals are part of the "Commercial Professional Apprenticeship Program." This program is distinguished by specific features and is subject to ongoing adjustments due to technological changes impacting the world of work and revisions in labor and educational legislation (Senac, 2015).

The institution has a strong and decisive connection with the world of work, which is a defining feature of Vocational Education in Brazil. Additionally, it represents a significant educational pathway, allowing students the option to combine this training with their Secondary Education.

The thematic areas covered in the various courses offered focus on Gastronomy, Health, Safety and Welfare, Fashion, Information Technology, Business Management, Beauty, Tourism, Hospitality, and Leisure. In this way, aligning more closely with the demands of companies and their operations becomes a key element

and even a differentiator, as market research is conducted and the primary productive sectors are listened to.

> In light of this scenario, vocational education must align more closely with the productive sector to design courses and programs that meet the demands of the workforce. To effectively identify the needs, characteristics, and trends of various productive sectors, Senac uses Sector Forums organized by segment as its main method of listening. These are consultative forums composed of stakeholders from the world of work, including company representatives, industry associations, employers' and workers' unions, academia, and institutions of research, science, and technology, as well as experts from Senac itself. The aim is to gather a diverse range of perspectives on the realities of various occupations (Senac, 2022b, p. 14).

In a world that is constantly changing, professional education serves as a crucial link between individual development and job market demands. To ensure its courses and programs meet the needs of the productive sector, Senac invests in an innovative methodology: Sector Forums. They consist of representatives from companies, industry associations, trade unions, research and educational institutions, as well as experts from Senac itself. They foster an open and inclusive dialogue about the characteristics, trends, and needs of each economic sector. This active listening enables Senac to accurately identify the challenges and opportunities in the job market, equipping students with the tools and knowledge necessary for professional success.

Schneider et al. (2021) highlight the strong performance of vocational education in international competitions such as WorldSkills. The case of Brazil is emblematic because, according to data from the Programme for International Student Assessment (PISA), its basic education ranks among the worst of the 70 countries evaluated. However, Brazil's performance in the aforementioned competition demonstrates that Vocational Education, by focusing intensively on the Learning to Know and Learning to Do pillars, adopts a more pragmatic approach to education. This approach is more utilitarian and closely aligned with the demands of the world of work, as illustrated in the following excerpt:

> When it comes to school performance across various educational levels—Early Childhood Education, Primary and Secondary Education, Special Education, and Youth and Adult Education—the data are worrying and indicate a steep decline in the country. However, when discussing Vocational Education, these international organizations highlight a different reality with varying results […] Thus, we have identified that Brazil's success in WorldSkills can be attributed to effectively integrating learning with 'doing' in the educational process. This approach adds the 'Learning by Doing' pillar to the school's pedagogical framework, underscoring the potential of Brazilian apprentices despite structural challenges in their training. Conversely, Basic Education has declined because it fails to integrate 'doing' with 'thinking' (Schneider et al., 2021, p. 117–118. Emphasis added).

While the primary focus of this research is on Senac, it is important to note that the "S" System encompasses various corporate entities dedicated to professional training, social assistance, consultancy, research, and technical assistance, as previously demonstrated. These institutions aim to provide specialized professional training to meet market demands, with each focusing on its own specific area of expertise.

It is important to consider the broad understanding of Vocational Education, which was once viewed as a separate system, somewhat distanced from Basic Education. Therefore, it is important to understand the role and responsibility of education systems in providing this service, which will require linking technical training with Initial and Continuing Education as well as with Youth and Adult Education (EJA) and Secondary Education. In this way, we can envision both a general education and a specialized education provided by technical vocational programs at the secondary level.

Professional Education (PE) goes beyond the outdated notion of being a separate system from Basic Education. Today, their interdependence and the responsibility of education systems to provide for them are recognized. This change requires coordination between Initial and Continuing Education, Youth and Adult Education, and Secondary Education to ensure a complete and comprehensive education.

Article 39 of the Law on Education and the Bases of National Education—LDB emphasizes that "professional education, integrated with various forms of education, work, science, and technology, leads to the ongoing development of skills for a productive life." In other words, educating for work is much more than a legal obligation; it is the fundamental mission of the institutions that promote it.

As a form of basic education, it involves training for the workforce or developing essential skills, also offered through free, fast-paced courses designed to meet the demands of the job market. In higher education, which is often criticized for being too theoretical, impractical, or disconnected from market realities, extension activities were introduced by the Ministry of Education (MEC) through a resolution in December 2018. These activities, which are mandatory and integrated throughout the curriculum, aim to bridge the gap between students and society.

In this context, the courses offered by the institutions mentioned above present a valuable opportunity to combine practicality with enjoyment, supporting their noble mission of education for employment. Thus, training provides an excellent opportunity to broaden skills and exposes students to different realities, encouraging them to expand their vision and open up new perspectives on work, training, and performance.

5 Vocational Education as a Possible Path to Connecting Students with the Job Market

To effectively enhance and expand the concept of competencies within vocational education, it is crucial to understand the practical, hands-on nature of these competencies. They go beyond mere theoretical knowledge to include real-world application, emphasizing skills developed through practical experience. The development of competencies in Vocational Education, as outlined in the National Curriculum Guidelines for Vocational Education, requires moving beyond the segmented view of theory and practice (Senac, 2022).

From this perspective, we can apply concepts that represent abstractions from the field of human knowledge. In this way, pedagogical practice manifests as actions that can be tested and implemented. Thus, the action-reflection-action cycle enables the embodiment of professional practice. This facilitates the integration of knowledge, skills, and attitudes, which are represented by the popular acronym KSA, enabling continuous growth.

We can use the examples of courses for cooks, pastry chefs, hairdressers, makeup artists, computer programmers, or dressmakers, as those that, among others, are applicable and quickly integrated into commerce and the world of work.

> Vocational education centers can offer general skills and foundational courses for a wide range of occupational options, but they cannot provide the same depth or intensity of learning for each one. The centers must always offer educational programs that meet the needs of companies, the demands of students, and the interests of authorities and educators. Those who prioritize meeting company demands often focus on sectors with the greatest regional development. Generally, only a few institutions are available to meet the needs of a region. In addition to providing general or basic level courses, vocational education institutions must make strategic decisions about which specialized programs to offer (Casanova, 2015, pp. 66–67).

Offering general skills and comprehensive courses is essential to cater to different career options, but delving into all of them with the same intensity is unfeasible. The selection of specialized programs should be guided by a careful analysis of the needs of companies, students, and the community.

Prioritizing the demands of companies can lead to a focus on sectors with greater regional development. However, it is important to balance this by addressing the needs of various sectors and regions. When making strategic decisions, vocational education centers must strike a balance between meeting market needs and providing development opportunities for all students.

A widely implemented initiative, known as the Senac Gratuity Program—PSG, serves as a pioneering national employment strategy. This program views apprenticeship as a fundamental and strategic goal for Senac, funded by mandatory contributions. It provides free opportunities for low-income individuals, specifically targeting students who are enrolled in or have graduated from Basic Education, as well as low-income workers, whether they are employed or unemployed.

Among the social inclusion initiatives that Senac offers in Sergipe, the PSG is a national policy that supports various activities aimed at social inclusion, one of which is the “first job” program, which provides teenagers and young adults aged 14–24 with opportunities to gain experience at Senac and in the commerce, services, and tourism sectors.

Another significant initiative in this context is the National Program for Accessibility, Diversity, and Social Inclusion. This program is designed to support individuals with disabilities, those in vulnerable and extremely impoverished conditions, and transgender and people with other genders by providing training to facilitate their access to the job market.

Additionally, the Sergipe Regional Office has implemented a program to support individuals facing socio-emotional and accessibility challenges. There is a specific

investment to train these individuals, enabling them to access and retain employment and income.

It should be noted that the free spots will be available as follows: Initial, Continuing, and Technical Professional Education at the Middle Level. The regional directorates present the PSG's Annual Action Plan, detailing the activities to be implemented and their enrollment targets for the year. This is a remarkable activity that positions Senac among the leading institutions promoting social and educational inclusion in the country.

Entrepreneurial networks are thriving in the digital landscape, fostering individual and collective growth through collaboration, knowledge sharing, and the development of innovative projects. This connectivity, enabled by digital tools, democratizes access to information and resources, opening up a world of opportunities for both students and professionals.

Online platforms and applications enable real-time interaction among network members, regardless of their physical location. This constant communication facilitates the exchange of ideas, collaborative activities, and the development of creative solutions to market challenges.

For students, entrepreneurship networks provide an environment that fosters the development of essential future skills, including creativity, initiative, planning, and project management. Through mentoring and networking, students can learn from experienced professionals, gain valuable insights, and build a network of contacts that will assist them in their career paths.

Networks also provide access to resources and information, such as job opportunities, internships, and courses. This direct connection with companies and educational institutions enables students to explore various areas of interest and discover opportunities that align with their goals.

In short, entrepreneurial networks, powered by digital tools, are valuable assets for building a more prosperous and innovative future. Through collaboration, knowledge sharing, and the development of innovative projects, they contribute to both individual and collective growth, democratize access to information and resources, and empower students and professionals to reach their full potential.

> In this context, the selection of a particular teaching and learning methodology is linked to the institution's stance and educational goals in response to societal demands and the educational environment. As analyzed, teaching and learning methodologies extend beyond the classroom and its planning; they reflect the social practice of education within a specific historical context (Senac, 2022, p. 7).

To enhance specialized technical training that emphasizes practical knowledge, typical of this educational approach, Senac published materials in 2020. These materials were designed to develop the skills of teaching teams, better aligning their actions with workplace demands. The focus was on methodologically emphasizing learning paths through a national proposal for training itineraries in the pedagogical area. Consequently, there is a clear commitment to ongoing professional development and qualification.

Converging vocational training with market demand and valuing the local productive arrangement, as well as creating a favorable scenario for adopting public policies to absorb these professionals, also drives the development of related economic activities, resulting in production links, connectivity, and continuous learning.

As a policy to strengthen the entrepreneurial ecosystem, the Senac Opportunities Bank is a service designed for the institution's students and alumni. Its goal is to facilitate integration between students and the job market. Through this database, companies can post job and internship openings, while students and alumni can access these opportunities and apply for them.

This Senac initiative aims to facilitate access to job opportunities for students and alumni that align with their training and professional interests, as well as to establish partnerships with companies seeking qualified professionals. In this way, Senac's Bank of Opportunities assists students in entering the job market by serving as a bridge between their education and the actual demands of companies. Additionally, for companies, this platform offers an effective means of finding qualified professionals who meet their needs.

In this way, the initiative plays a crucial role in enhancing employability and establishing solid career paths for the institution's students and alumni.

It is worth noting that when we discuss the entrepreneurial ecosystem, we are not just talking about businesses. According to Dias Filho and Nunes (2022), the concept is currently supported by the enhancement of skills such as self-knowledge, creativity, resilience, persistence, flexibility, commitment, cooperation, leadership, and self-confidence. These skills promote autonomy and enable learning in four key areas: personal competence (learning to be), social competence (learning to live together), cognitive competence (learning to know), and productive competence (learning to do). This approach is justified by the need to spark students' interest in planning a future filled with dreams, ambitions, and a collaborative spirit. Entrepreneurial Education plays a crucial role in this context by fostering a dynamic process of awareness, reflection, and critical thinking among students in Professional Education. It encourages an active, rather than passive, form of citizenship, facilitating integration with the surrounding world and helping students set objectives, goals, and strategies that could potentially transform their lives and society.

In this sense, digital tools have revolutionized the way entrepreneurial networks operate, expanding their reach and democratizing access to opportunities. Online platforms and applications enable communication and interaction among members, allowing activities to be conducted in real time, regardless of physical location. The constant connectivity benefits both students and professionals in numerous ways.

For students, entrepreneurship networks provide an environment that fosters the development of entrepreneurial skills, including creativity, initiative, planning, and project management. The mentoring and networking opportunities offered by these networks enable students to learn from experienced professionals, gaining valuable guidance and insights for their career path. Networks also facilitate access to resources and information, such as job opportunities, internships, and courses, by directly connecting students with companies and educational institutions.

6 Final Thoughts

The relevance of the vocational education provided by Senac, over nearly eight decades of operation, is evident in its numbers and its impact on regional economic development and local labor markets.

Among the social inclusion initiatives is the Senac Free Program, which offers a variety of courses to help low-income students acquire new skills and secure a place in the job market. The Bank of Opportunities deserves mention as a policy designed to facilitate entry into the world of work and connect professionals and/or companies within a network. Additionally, students eager to tap into the opportunities created by the entrepreneurial ecosystem can take courses and training through various qualification programs. These programs cover a range of topics including business management, finance, marketing, and innovation. Teacher and pedagogical training for professional education and other equally important programs.

The Senac network enhances its connection with the job market through an innovative structure, equipping its students with a robust and responsible educational approach, as well as providing qualified instructors and state-of-the-art equipment. Figure 2 illustrates the significance of this network for the country.

It can also integrate consultancy and mentoring services, as these organizations offer support to entrepreneurs looking to start or grow their businesses by providing technical and managerial assistance. There is also the possibility of accessing credit and financing, as some institutions offer credit lines and financing options for entrepreneurs, helping them to develop and expand their businesses.

The digital age is creating a new landscape for entrepreneurship, fostering a symbiosis between innovative tools and the entrepreneurial spirit. Online platforms and apps thrive as catalysts for ideas, connecting creative minds and fostering the development of innovative projects.

This global connectivity redefines the concept of collaboration, enabling individuals from diverse backgrounds and areas of expertise to unite around common goals. The exchange of knowledge and experience becomes instantaneous, fostering the development of effective solutions to contemporary challenges.

For students, this synergy between digital technology and entrepreneurship opens up a range of opportunities to develop essential skills for the job market. Through online platforms and applications, they can enhance their creativity,

Fig. 2 Rede Senac. *Source*: Senac Report, 2023

initiative, planning, and project management skills, thereby building a comprehensive and competitive professional profile.

Mentoring and networking, facilitated by digital tools, connect students with experienced professionals, providing valuable insights and opening doors to their professional futures. The search for job opportunities, internships, and courses becomes more efficient and targeted, directly connecting students with companies and institutions that align with their interests and goals.

Thus, the digital age and entrepreneurship are intertwined, creating an environment conducive to innovation, individual development, and the building of a more prosperous future. Digital tools democratize access to information and resources, empowering students and professionals to explore their full potential and make meaningful contributions to society.

And finally, the promotion of events and networking through talks, workshops, and networking activities provides opportunities for entrepreneurs to connect, share experiences, and expand their networks. Stimulating innovation is also an objective of this network, which encourages programs designed to foster creativity, develop new ideas, and implement innovative solutions in business.

These initiatives significantly contribute to strengthening Brazil's entrepreneurial ecosystem by training entrepreneurs and enhancing the growth and competitiveness of companies in the market.

In light of this, vocational education is emerging as a promising way to create a fairer and more prosperous future. At the heart of this journey is Senac, an institution committed to fostering hope and autonomy among its students by equipping them with the necessary tools to turn their dreams into reality.

By promoting entrepreneurship, Senac creates opportunities for socio-economic development. Through innovative courses, programs, and initiatives, the institution equips individuals to design, structure, and manage their own businesses, thereby fostering job creation and economic diversification.

Senac's social mission is realized through concrete actions that democratize access to quality professional education. Scholarships, qualification programs for people in situations of social vulnerability, and partnerships with public and private institutions expand opportunities for those seeking to build a better future.

By investing in vocational education and entrepreneurship, Senac is helping to build a fairer, more equitable, and happier society. The institution acknowledges that education is essential for both individual and collective growth and is committed to transforming lives by educating critical, independent thinkers who are equipped to meet the challenges of the job market.

Promoting hope and autonomy among students who view Vocational Education as a path to transforming their realities and futures is to recognize that schools, as spaces for building and discovering potential, facilitate the fulfillment of their social mission and their relationship with work, contributing to the development of a fairer, more equal, and happier society.

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Educating Through Collaborative and Ethical Leadership

Ana Martins and Isabel Martins

Abstract This book chapter seeks to convey the significance of the shift in paradigm from the Scientific Management to the New Age Quantum paradigm. In this paradigm shift, individual ambidextrous learning is viewed as being essential for the current globalised world of constant flux with a Quantum nature. The chapter also includes the objective to evidence how metaphors can be used to convey various organisational insights on constructs such as leadership, culture, and learning. Indeed, the extant literature reveals the opportunity to conduct research on this theme because this is an area with limited research. We argue the Follettian perspective of co-leadership, and within this context, we ground our study to illustrate the need for education to provide the path for learners to acquire and grow the skills of co-leadership, which is humanised, responsibly, and ethically focused.

Keywords Co-leadership · Individual ambidextrous learning · Metaphors · Phronesis

1 Introduction

This chapter sets forth the debate of the co-leadership perspective, contextualised specifically within a 'Quantum, re-humanised, responsible and ethical leadership' lens that could be implemented at universities, including the whole higher education

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J. Jardim (ed.), *Entrepreneurial Education in a Global and Digital World*, Studies on Entrepreneurship, Structural Change and Industrial Dynamics,
https://doi.org/10.1007/978-3-032-17008-8_11

institution (HEI) space. The chapter expounds upon the debate which foregrounds, (1) the urgency for academic programmes to become re-humanised and in so doing, instil the Follettian leadership perspective; (2) the focus be placed upon the ethical leadership perspective; and (3) the enhancement of behaviour imbued with trust and virtuity, considered vital to encourage reliable and steadfast relationships. This chapter appraises extant literature to demonstrate that Quantum, humanised leadership includes moral, ethical, and virtuous principles at its core and postulates the ethos wherein individuals are believed to be obliging, reverent, and ultimately, be held with high esteem. This chapter embarks on a conceptual analysis that explores ethical leadership, largely debated in research on contemporary organisations. The chapter develops the current debate regarding why the ethos of responsible and humanised leadership skills needs to be rekindled in education. This is demonstrated through the move evident in bringing back the perspective of the collective in leadership, wherein the individuals play a key role, thereby distancing from the individualistic leadership perspective. This co-leadership fosters creativity and innovation, which arises from a context based on humane and benevolent principles wherein individuals are accountable.

2 Developing Skills for the Quantum Paradigm Shift

The contemporary knowledge-based society calls upon the paradigm that is centred on humans and imbued with principles of responsible leadership, which is a mindset shift from the paradigm that is embedded in the Newtonian and traditional way of thinking. The latter should be replaced with a New Age, Quantum paradigm, which encourages collaboration and interpersonal connections to augment the social capital of individuals. Moreover, the ecosystem of industries 5.0 and 6.0 is intended to encourage considerable synergy between machines and humans. Additionally, this New Age, Quantum paradigm fosters the attainment of the responsible triple bottom line (RTBL), as Elkington (1994) posits. The organisation harmonises the potential of its people, with its profits and the planet.

Four of the seventeen Sustainable Development Goals (SDGs) emphasise quality education centred on inclusivity and gender equality. The SDG4 is interconnected with Education 2030 Framework for Action (UNESCO, 2021a, 2021b). This SDG incorporates ten targets that embrace the attainment of a skills set that can uphold decent work, which is conducive to sustainable and global citizenship behaviour. This further corroborates with the conception that 'students-as-givers engenders the responsible citizenship on the individual as opposed to student-as-taker' (Lackéus, 2017, p. 646). Education thus plays a fundamental part in achieving these targets and especially through the enhancement of soft skills. The latter are also termed 'transversal skills', 'competencies', 'transferable skills', 'generic skills', 'values', 'key skills', 'core skills', 'attributes', 'characteristics', qualities', 'characteristics', 'personal skills', and 'professional skills' (Lukwago et al., 2023; Tymon, 2013). Additionally, generic skills include 'Imagination/ creativity; adaptability/flexibility;

willingness to learn; independent working/autonomy; working in a team; ability to manage others; ability to work under pressure; good oral communication; communication in writing for varied purposes/audiences; numeracy; attention to detail; time management; assumption of responsibility and for making decisions; planning, coordinating and organising ability', as evidenced by The Pedagogy for Employability Group (Pegg et al., 2012, pp. 4–5) and also corroborated by Jackson and Bridgstock (2021).

Mirvis et al. (2010) are of the opinion that responsible business leadership entails three perspectives: (i) the traditional (modernist), (ii) contemporary (relational), and (iii) horizon (holistic). These perspectives correspond to unique approaches. Individuals thus acquire a skill set that emphasises social skills which foster organisational sustainability via cooperating with stakeholders. This holistic lens embraces the individual (me), the organisation which is responsibly geared (we), and the external stakeholders (us). Leaderful management is based on a single leader with a mindset aligned with rank and the command-and-control mindset. Individuals become suppressed to utilise their capability to be human and stifles their intelligence (Martins & Martins, 2022). This mindset is based on the Scientific Management perspective. Hence, the need for a shift in paradigm so that organisations embrace the New Age, Quantum paradigm. The latter entails the move from the Newtonian seventeenth-century model as well as that of the Taylorism twentieth-century Scientific Management model to embrace the twenty-first century—the digital age, which is built upon Quantum technology. The latter has taken over from the industrial and mechanistic certainties. From this shift in paradigm arises a meta-theory which is designated as Quantum management theory, as Zohar (2022) postulates. This Quantum paradigm is holistic in nature and embraces the fact that everything is a part of and is interwoven in a collection of relationships that make up a greater whole. The Quantum management paradigm (QMP) is a new philosophy of life, of leadership, a way of life.

Quantum management (QM) considers organisations to be a conscious, living, biological energy system, with a sense of purpose, values, and aspirations; its all-important elements have adaptive and self-organising capabilities channelled through co-creative connections between its parts and the external context. Holistic and systems thinking with positive energy and motivations will lead to sustainability. The opposite occurs with negative motivations, wherein thrives corruption, greed, which leads to dysfunctional organisations. The characteristics of QM encompass ethical, agile, dynamic, meaningful, and purposeful (Zohar, 2022). As individuals are inimitable for the organisation, they are essential because their Quantum self is both a particle (an individual person) and a wave (a partner) in organisations, and therefore, play an equal and fundamental role along with all the other stakeholders of the organisation. Additionally, self-creation and self-recreation, inherent in Quantum philosophy, could perhaps be the purpose of life. Indeed, Zohar (2022, p. 37) further opines '[w]hat we *are*, or are doing, now is always *entangled* with what else we *can* be, or *might* be doing […] [is the] Bohmian view'.

An organisation exists in the perceptible understanding of the present time. By posing questions that will afford various responses, according to Heisenberg's

Uncertainty Principle in Quantum physics, these questions will bring about many possible answers, realities, or results which arise from the unlimited ability that is linked to the invisible world of Quantum implicate order (Zohar, 2022) that embraces endless options and probabilities. This paradigm shift also enhances a rebalancing and re-humanisation of leadership in organisations. The positive co-leadership gives rise to innovation, which nurtures the path to sustainability and responsible organisations. This is also imbued into society at large. This paradigm shift is also evidenced in education. 'Without hope there is no way we can even start thinking about education' (Freire, 2007a, p. 87). Education and hope are grounded on the same principle of being (Freire, 1994).

3 Characterising the Role of Metaphors

The COVID-19 pandemic urged the need for humanity to reappraise the very essence of being human because society was on the brink of losing its sense of humanity. The world faced a situation of either 'be doomed or change to survive' mode. At the same time, technology, which was a complimentary tool, became the essential tool in that employees and individuals were forced to rely on remote means to work, live, and ultimately, survive. This drastic shift forced upon the world urged the deep existential question to arise in the post-pandemic context—whether we are able to live with technology or will be ruled by technology. Feenberg (1999) deliberates on the approach to constructionism with the view of systemic technology—social and critical in nature, corroborating with Marcuse (1964) and Foucault (1977, 1980). 'These theorists analyse the links between technology and power; how technology can serve the interests of social domination and pave the path for a debate on the alternative views regarding technology. Feenberg (1999) links this theory with social philosophy in an attempt to eliminate those unilateral approaches which debase and reduce the value of technology or which have reduced it to social facts' (Martins & Martins, 2023, p. 19). Moreover, the 'human element […] prevail[s] which enable[s] individuals to be productive [and] technology should be put into perspective, democratic, conciliating, multifaceted, reflexive, and unambiguous' (Martins & Martins, 2023, p. 25).

Responsible leadership entails five dimensions of compentency, such as 'creating, managing and securing good relations with multiple stakeholders, ethically correct and values-based behavior, a continuously developed self-awareness, good understanding of the interdependencies of a larger system, and the ability to lead change and innovation towards sustainable development' (Muff et al., 2020, p. 2255). Additionally, a framework was proposed that integrates three domains of action, according to Datar et al. (2010), namely, comprehending, making, and existing.

It is perceived that the majority of organisational theories and knowledge (Burrel & Morgan, 1979), via language (Rorty, 1992), are dependent on imagery, descriptions, and symbols, and these are grouped into what is designated as metaphors

(Cornelissen, 2008). This enables individuals to better understand how organisations function because that which we understand in our normal circumstances is applied to the organisational context. Indeed, Taylor already postulated metaphors in the Scientific Management theory, as well as in the Behavioural Theory of the Firm theorised by March and Simon (1958), and more recently, Manning (1979) postulated the notion of metaphors which are applied by individuals in an organisation and which are then analysed by researchers in research studies. This category of research was further developed by several authors, Deetz (1986) and Cornelissen (2008) to name a few. These core metaphors have also been applied by authors such as Schön (1979/1993) with deep and surface learning, Gibbs (1979/1993) and Cameron (1999). The analogy of the ecosystem, which is in constant flux, as Morgan (2016) theorises.

Whilst a better understanding of organisations is achieved, and this is positive, there is the other side of the coin, which is perceived as negative is the fact that humans are not taken into account. The efficiency of machines is the most important factor that is portrayed through the use of metaphors (Örtenblad, 2024). Indeed, herein lies the conundrum and the need for individuals to pause and reflect upon the appropriateness of the imagery used. The use of metaphors depicts a methodology based on the duality between collaboration and context or realm. This affords individuals with the understanding of how organisations perform and also generate new awareness, insights, and consciousness. This positive role should be nurtured as this affords responsiveness, mindfulness, and appreciation of these energies.

A great majority of HEIs are characterised as having traditional structures and mechanistic mental models, inherent in the Cartesian dichotomy, and thus exemplify the machine metaphor (Morgan, 2016). Moreover, the Newtonian paradigm is associated with the clockwork metaphor, which is associated with the time metaphor. On the opposite pole is the network organisation, which denotes a flexible structure and mindset. Moreover, there is a perspective that considers the behaviour of certain business schools to be iniquitous (Podolny, 2009). Hence, the vital need to re-purpose this perspective and bring about the re-humanising element in all the programme offerings. This will elevate the moral awareness of learners and infuse the perspective throughout the business sector.

The metaphor of humanised leadership brings forth a new perspective when appreciating the human element of organisational life. Humanising leadership entails the ability to express emotions in verbal and non-verbal communication and rekindled in moral judgements. Furthermore, metaphors foster an ethical stance in language. When used in research, this presupposes a link to action, which is grounded in ethics and is social in nature. Ricoeur (1974) emphasised that metaphors enhance the notion that institutions should be honourable, esteemed, and bona fide in nature, which pursue the fostering of a respectable, virtuous life to all stakeholders.

There is a need for business schools to engage in a sense of purpose in the ecosystem. This can be achieved through the transformation of their academic programmes in order to implement Quantum, responsible, and humanised leadership principles in the curricula. The latter will comprise a related set of skills which will

enable learners on the education in leadership programmes to be instilled with the capability to re-humanise the learners themselves by gaining the ethical principles (Petriglieri & Petriglieri, 2015).

The ontological shift is required in order for leadership to move away from being a profit-related economic activity to one that embraces the collective good instead of the personal, individual gain. Moreover, the Follettian perspective posits the importance of collective consciousness where leadership prevails in a group rather and not in one single person, which denotes a context wherein group activities and cooperative relationships thrive. This pragmatic worldview, as Follett postulates, embodies the holistic paradigm, thus affording organisations the context to be inclusive, providing individuals the capability to foster innovative and creative ideas, as well as to nurture interactions with others.

Indeed, the Follettian lens is further corroborated with Freire (1972) who postulates that the premise of responsible education is associated with humanisation, which has praxis at its core. Humanised leadership is a metaphor associated with this praxis. This shift further enhances the move towards inter- and transdisciplinarity. Currently, that education which is pervaded with disseminating knowledge based on traditional, archaic principles does not instil in learners the ability to how to connect. This thwarts the capability for learners to think differently. The shift from the de-humanised leadership which has become an idealised asset and isolated from a group (Alvesson & Spicer, 2010). Education should equip the learner with critical awareness and critical thinking.

Follett postulates the notion of 'power-with' which is ripened over a period of time and is directly associated with individual accountability and autonomy (Martins & Martins, 2022). This form of power is favourable in contrast with that which is related to controlling other individuals (Carlsen et al., 2020) because power-with encompasses knowledge and practical know-how. Follett is of the opinion that leadership is based on a context enhanced by interactions between individuals. These interactions should be active and engaging to nurture trust and enable solving matters through the use of innovative thinking. This is complemented with Fayol's theory of management. Hatchuel and Segrestin (2019) postulate that the construct of creative leadership is associated with Fayol's construct of the leader who is capable to motivate and instil the cooperative potential to handle the changeable set of circumstances. Fayol postulated a creative and innovative type of management.

Follett theorises the ensemble learning theory (ELT) as well as the entrepreneurship centres; the latter refers to the area wherein integration prevails connecting academics, students, administrators as well as the stakeholders in the public (Rosile et al., 2018); these principles are considered as a novel model for public universities. The model designated as ELT prevails when constructive conflict exists (Follett, 1919). Indeed, the ELT model could also be relevant to current universities. Through integration, stakeholder activities flourish and are communicated through a collective and mutual configuration (Follett, 1919). Additionally, this Follettian perspective brings together the fields of economy and education. This integration enables the community to be infused directly with wealth and capital (Novicevic, 2007). It is in this setting that creativity and innovation flourish, Nelson (2017).

4 Adaptive Learning and Integration as the Mission

The Follettian concept of integration expounds the notion of power-*with,* which differs from the Fayolian view of power-*over*. Integration also relates to constructive conflict, which fortifies the important role of creative co-leadership as the passage to creativity and innovation. Follett (1924) further advances that adaptive and cyclical learning, which consists of three core notions, namely (1) holistic thinking of the context as a whole instead of in loose segments; (2) guidance to acquire the capability of being inventive, innovative, and ingenious. The individual sculpts and forms integrative thinking through the imagination and the imaginative and practical ability; and (3) bolster the ability to handle the specific context.

Adaptive and circular learning is grounded on the individual being aware of consciousness. This resounds with the fact that the brain metaphor refers to learning, which is then nurtured into the organisation. Thus, a leader is one who *shares* authority in the organisation as '[a]uthority follows the function[…] belongs to the job and stays with the job' (Follett, 1996, p. 153). Learning is an interminable lifetime mission, Follett (1998/1918).

Indeed, HEIs need to do justice to their role in educating society by participating in and being members of various initiatives, namely, the Globally Responsible Leadership Initiative (GRLI), established in 2004, by UN Global Compact as well as the European Foundation for Management Development (EFMD). The latter emphasises responsibility which goes beyond the context of corporate social responsibility (CSR). The United Nations Principles for Responsible Management Education (PRME). Laasch (2018, p. 9) considers responsible management as the 'integration of sustainability, responsibility, and ethics into […] managerial practice(s)'. Furthermore, Brundtland (1987) asserts that sustainable development is linked with the domain of sustainability, which considers the RTBL, Dyllick and Hockerts (2002). The concept of RTBL is referred to earlier in this chapter. In the notion of responsible management, the domain of responsibility refers to the handling of obligations and responsibilities that occur between various stakeholders, including managers (Fassin, 2009; Freeman, 2010). Corporate social responsibility (CSR), business, society including responsible leadership are areas of discourse within this domain (Wood & Logsdon, 2019).

The ethics domain of responsible management handles interrogations in the context of business and management-related decisions as well as behaviours that are morally correct or incorrect (Crane & Matten, 2016). Additionally, universities and business schools necessarily require instilling their academic programmes with principles of fostering dialogue, partnerships, enhancing values, sense of purpose, method, and research—all associated with the Seventeen United Nations Sustainable Development Goals (SDGs)—'Agenda 2030', and further espoused by Godemann et al. (2014). These principles will equip learners with the agile mix of hard and soft skills as well as the higher-order global responsibility awareness enabling them to contend with the volatile and uncertain circumstances of the business world (Besharov & Khurana, 2015; Gitsham et al., 2009).

5 Individual Ambidexterity and Learning Leadership Ecosystems

In this part, the debate highlights the urgency for a mindset based on learning leadership. The argument of 're-humanised, responsible leadership and management' is emplaced in the perspective that evidences the HEI lens, specifically universities. It is evident that numerous modern organisations have become examples of unethical behaviour and financial scandals that stem from dishonourable, reprehensible, and disreputable leadership practices. Leaders are fundamental in encouraging ethical beliefs, ideologies, and values to be infused throughout the organisation (Gitsham et al., 2009). The education system has a part to play as universities and business schools fulfil a vital role by ensuring the curricula of their academic programmes embrace moral and ethical perspectives, enabling learners to acquire and become instilled with positive ethical principles.

When an individual performs the role of leader, then this should be considered as second nature. Leading can be linked with 'learning leadership', which is grounded on the assurance that there will be immense commitment albeit no promise of being triumphant (Antonacopoulou, 2014). This praxis is aligned with the pursuit of practicable distinction and excellence instead of being centred on realisable goals. Undoubtedly, contributing to leadership is premised on assurance and pledge coupled with an earnest avowal to ethically participate in a need that is recognised as altruistic and for the common good. Learning leadership goes beyond the simple realisation of results that are self-serving. Indeed, learning leadership is aligned with ambidextrous leadership, through what is termed as leader opening behaviour, because the latter fosters a context wherein new ideas can be created, thus enabling the organisation to be innovative (Rosing & Zacher, 2023).

Co-leading enables individuals to develop their emotional capital, which is afforded from the cyclical and collective learning that occurs in the team. Additionally, developing these individuals also prompts an enhancement of spiritual capital lending to a holistic perspective. Co-leading, being similar to distributed leadership, entails having the capability to engage in dialogue, be adaptable, openness, and be receptive to a culture that is in favour of innovation (Martins & Martins, 2022). The knowledge society and global economy with all its vicissitudes have also had spillover influences on the dynamic characteristics of the learning organisation. Indeed, a lifelong learning mindset prevails in the context, which is imbued with a culture of learning—this is how personal mastery has progressed. The organisation and its ecosystems are infused with this mindset, and the latter supports a culture of cooperative learning imbued with the approach based on systems thinking.

The proclivity to innovate arises when the organisation innovates and is infused with corresponding mental models, which encompass a shared vision focusing on the future. Indeed, teams are the channel through which learning prevails, knowledge is created, shared, and flourished throughout the organisation (Martins & Martins, 2024). There are also some setbacks associated with the learning organisation because learning can be well received or met with resistance. Toxic work

environments repel learning opportunities because the former are averse to the benefits associated with serious consideration and reflection.

Ambidexterity, which is associated with the individual, is an essential construct that has been little explored (Rosing & Zacher 2023). This type of ambidexterity is theorised to be a blend of individual exploitation and exploration (Mom et al., 2007). An individual explores when experimenting, in the quest for different paths to complete an activity and learning by doing because this type of behaviour urges for the need to move away from routine in order to experiment something different, novel, and acquire new knowledge (Chang et al., 2016). This enhances the flexibility and adaptability of the individual as there may well be a need to develop their knowledge and skillset. By contrast, exploitation entails the use of routines and bases one's actions on existing habits and knowledge, which leave limited scope for flexibility; instead, it focuses on predictability and certainty without experimentation (Rosing et al., 2011).

Indeed, the so-called ambidextrous individual, via self-management, will manage, over and direct their particular behaviour in order to handle the exigencies and strains stemming from exploitation and exploration. Ambidextrous leadership encourages the individual to perform with innovative behaviour (Zacher & Wilden, 2014). Furthermore, studies reveal that the level of innovation is elevated when both exploitation and exploration are of a great level (Zacher et al., 2016). Contextual ambidexterity can be considered as having direct results intended for individual ambidexterity (Kang & Snell, 2009). For Kauppila and Tempelaar (2016, p. 1022), 'rather than being a psychological trait, ambidexterity is an individual's behavioral capacity to engage in and alternate between opposing task elements'.

At the organisational level, there is a need to attain equilibrium between exploration (acquisition of and adjustment to new knowledge) and exploitation (stability through knowledge that exists), Tushman and O'Reilly (1996) and Amabile (1988). This balance is vital in order for the organisation to be sustainable (Levinthal & March, 1993). Moreover, the 'Follettian perspective enables a balance to be achieved in the exploration—exploitation of co-leadership leader*less* behaviors, namely open (explorative and creative) and closed (exploitative and routine) behaviors' (Martins & Martins, 2022, p. 118).

Mom et al. (2007, p. 910) postulated that explorative behaviour of managers can be considered to be 'searching for, discovering, creating, and experimenting with new opportunities', behaviour that is exploiting in nature, is regarded as 'selecting, implementing, improving and refining existing certainties' (Mom et al., 2007, p. 910). This is corroborated by Bonesso et al. (2014). Flexibility, based upon time and chronological sequence of events, denotes the capability that the leader has to alternate amid behaviours considered as being related to exploitation and also exploration, depending on the context (Gerlach et al., 2020). Furthermore, Martins et al. (2017, p. 226) determine that:

> different learning loops (feedback and feedforward) are in action because they connect and capitalize on learning […] leading to exploitation and exploration, thereby opening the way for ambidextrous learning […] This implies a mind, both at the individual and group level, which is freer from preconceptions, more enthusiastic and […] committed to furnish

organisations with various capitals, namely, intellectual, personal, relational and social. In this way, HEIs in general and universities in specific should be more aware of this flexibility in order to contribute to the shift in both organisational and social paradigms. These paradigms can be nurtured through learning, specifically which is future facing (feedforward) and based on efficiency, as well as on that learning which is more effective in nature (feedback).

6 Phronesis and Adhocracy as the Cultural Interface

Phronesis is a vital competency required for co-leading. Perceptiveness and discernment are associated with phronesis and the latter arises from practical knowledge, experience, and achievement. This practical philosophy, imbued with intellectual virtuosity, enables individuals to arrive at decisions that are contextualised and in favour of the common goal. Socrates theorised that phronesis is the ability that human beings have of being able to steer and improve themselves ethically. Plato and Aristoteles also corroborated with this action that is normative in character. Plato further supported Socrates with the fact that phronesis is regarded as being a virtue of a moral nature arising from the four virtues, Greek in origin, which are considered to be the primary source of phronesis (Kirkeby, 2009). These virtues entail, namely, justice, courage, temperance, and phronesis. Additionally, Plato considers phronesis as being a synthesis of all three virtues; phronesis also means an action which is ethically veracious; phronesis is also associated with self-reflection.

Plato further links phronesis to knowledge that is virtuous, fair, and reasonable. Indeed, phronesis entails the individual having full knowledge of him/herself and of others, having the capability to be prudent, make wise decisions based on sound judgement, discernment, and judiciousness, based on the imagination and logicality, which includes the ethical in order to view society through a virtuous and moral lens.

Aligned to the notion of ethical action is the concept of culture, which is a fundamental element in organisations as individuals bring with themselves beliefs, values, guiding principles that arise from their milieu and are adapted to the organisational context (Schein, 1996), as an organisational root metaphor. The Quantum paradigm we are discussing throughout this debate also advocates a discernible culture. One can postulate that Quantum paradigm and its integral principles are aligned to the type of culture designated as adhocracy, Quinn (2011). Indeed, that organisational culture, which is related to adhocracy, is prevalent in an environment wherein flexible teams operate, promoting their self-organisation, and is possible to exist because trust prevails among the team members, who are autonomous. In this adhocracy culture, decentralised decision-making prevails, further promoting creativity and innovation to flourish.

Responsible leadership is depicted as being grounded on ethical values and based on driven by the rapport amid leaders and stakeholders (Pless, 2007). The five

normative leadership theories, namely, transformational, servant, emotional, spiritual, and authentic, are considered to be relatively comparable to responsible leadership. It is necessary to highlight that authentic leadership is allied with the stakeholder approach (Freeman, 2010). The notion that organisations should have a caring approach to all their stakeholders and not only shareholders is in accordance with the stakeholder and the social responsibility approaches. This approach advances the sustainability of the organisation, which urges appropriateness. Additionally, internal and external relationships are fostered on trust in order to be sustainable, and this, in turn, enables a shared vision to be cultivated.

Ethics and trust are complementary because ethical behaviour leads to trust and nurtures relationships and enhances co-leadership (Martins, & Martins, 2017; Pearce, 2004). By instilling the organisation with a culture based upon its normative foundations of values and positive emotions, leaders are able to encourage trust and confidence among individuals enabling the organisation to be more humanised, ethical, and responsible. On the opposite pole, if leaders display dishonourable and unethical conduct, individuals in the organisation will lose conviction, become disloyal and distant towards the vision, which may result in mistrust. Indeed, the emotionally intelligent co-leaders are individuals who are imbued with trustworthiness, honesty and commitment to common good (Mackenzie & Welch, 2005; Martins & Martins, 2019).

On an individual level, hope encourages individuals to nurture humility, trust, valour, courage, equanimity, tranquillity, self-assurance, and determination and tenacity—deemed essential human values (Freire, 2007b). This mindset transformation arising from the shift to the New Age, Quantum paradigm is a wavering glimmer of hope and expectation towards re-humanisation in the education curricula. Indeed, educators are responsible for arbitrating the relentless change in the world and are also the bond and conduit for learners who are soon to join the workplace.

The construct of virtuous leadership entails a taxonomy grouped into more than sixty qualities categorised in excess of sixty qualities with innate merit, Hackett and Wang (2012). Of these qualities, 29 virtues are unequivocally allied to ethical leadership. Crossan et al. (2017) posit a framework of eleven virtues gauging leader character. These virtues include temperance, humanity, bravery, transcendence, judiciousness including fundamental virtues, vis-à-vis, humility accountability integrity, collaboration, and determination. The actions of an ethical leader are steadfast, frank, unbiased (deontological), and the leadership is harmony with ethical conduct and based on common good (teleological). Individuals are thus considered with respect (Lemoine et al., 2019). The personality of the individual can be enhanced with the characteristic of virtuosity (Crossan et al., 2017) as well as the organisational context (Newstead et al., 2020).

On the opposite pole, extant literature also includes studies on dishonourable, unprincipled, and immoral leadership activities (Conger, 1990; Lašáková & Remišová, 2015). More recent studies highlight leaders as being egotistical, self-centred, self-interested, and greedy (Hassan, 2019; Judge et al., 2009). This unethical behaviour is associated with the personality disorder trait of narcissism. This

characteristic is linked with arrogance and complacency, the misconception of unrestricted privilege and power.

Ethical, servant, and authentic leadership styles are interconnected albeit with distinctive philosophical assumptions (Lemoine et al., 2019) in spite of the fact that ethics is a fundamental element (Egorov et al., 2020). Authentic leadership is based upon virtue ethics and underscores the need for the individual leader to engage in introspection and harmony with the self. These are deontological in nature due to their normative principles of compliance. Servant leadership is grounded on the ethical philosophy of consequentialism as well as being largely associated with obliging numerous stakeholders. Alvesson and Einola (2019) contend that these leadership styles could result in depicting a misleading representation of contemporary leadership in organisations. Indeed, this type of leadership juxtaposes with the Follettian perspective of 'power-with' which diverges from 'power-over' which leads to controlling others (Follett, 1924). The Follettian theory of integration envisages this 'power-with' approach as being aligned with knowledge and experience but not associated with rank.

7 Conclusion

In summary, we endeavoured to reinforce the co-leadership perspective, contextualised specifically within a 'Quantum, re-humanised, responsible and ethical leadership' which is discussed through the HEI lens, focusing mainly on universities. We argue that Quantum, humanised leadership includes moral, ethical, and virtuous principles at its core and postulates the ethos wherein individuals are believed to be obliging, reverent, and ultimately, be held with high esteem. The chapter expanded on the contemporary knowledge-based society calls upon the New Age Quantum paradigm, which is centred on humans and imbued with principles of responsible leadership. The ecosystem of industries 5.0 and 6.0 is intended to encourage considerable synergy between machines and humans. Through the use of metaphors, we gain insights of the organisation and humanised leadership that is imbued within the Quantum management paradigm. The Follettian co-leadership concept of power-*with* differs from the Fayolian view of power-*over,* and this fosters learning and ambidextrous leadership, which enables individuals to bring forth new ideas so the organisation can be innovative. It is via phronesis—the practical experiences, the self-awareness, and ethical stance that individuals bring with them into the organisation—that enables co-leadership to flourish in a context that nurtures trust amidst adaptive learning and consciousness. In business schools, learning curricula need to be revisited so that learners may be instilled with the humanised, ethical, and Quantum skill-set. This is only the beginning of how to embrace this New Age paradigm…

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Educating for Human Rights, Citizenship, and Entrepreneurship

Susana Mourato Alves-Jesus and Rui Maia Rego

Abstract This proposal discusses the meaning of human rights education, seeking to emphasize that educating for rights means promoting respect for human dignity throughout the world and fostering participatory, inclusive, and global citizenship. It also stresses the need to integrate human rights education with entrepreneurship education, with the aim of finding increasingly fair, humane, and sustainable value solutions. It also aims to demonstrate the importance of a deep understanding of human rights, citizenship, and entrepreneurship in order to create more prosperous, innovative, and sustainable futures for all, giving as an example the *Dignipédia Global* digital platform, a differentiated educational strategy that systematically addresses these issues.

Keywords Human rights · Citizenship · Entrepreneurship · Globalization · Education

1 Introduction

Educating is an art and a necessity. To educate is to make known. It can be done through various strategies. Educating always means something positive, at least on an ideal level. Through education, standards are harmonized for the greater good, but ideally, we also teach what is different in order to understand it in a more radical way. Through uniformization (education), the world's diversity, independent thought, and the understanding of differences are taught. Ultimately, educating can

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J. Jardim (ed.), *Entrepreneurial Education in a Global and Digital World*, Studies on Entrepreneurship, Structural Change and Industrial Dynamics,
https://doi.org/10.1007/978-3-032-17008-8_12

also be a myth (Franco, 2014). It certainly has utopian contours and therefore expresses expectations and a desire for the future and improvement.

Education as an activity has dealt with countless disciplines and themes. Among these, education for human rights has been an emerging area, recently recognized at an international level (AA.VV., 2012). To educate for human rights is, *maxime*, to educate for the respect over the dignity of any human being in the world, and therefore to educate for the promotion of the greatest good for each and every one, in harmony, promoting human flourishing in its dimensions of fraternity, co-operation, and mutual help.

Therefore, educating for human rights (Clapham, 2016) cannot be anything other than educating for citizenship—for an increasingly participatory, inclusive, and global citizenship—since there can be no citizenship without awareness of the place of the Other, his or her opinions, convictions, and choices.

In the context of a global citizenship that has been widely witnessed (Steger, 2020), particularly in recent decades, with a never-before-documented escalation of various planetary changes—entering the Anthropocene (Lewis, 2018)—the issue of education for human rights and citizenship can and must also take into account education for entrepreneurship. This, on the one hand, in view of helping to find more and better valuable solutions for all, but on the other hand necessarily obliging us to do so in a fair, humane and respectful way for all and also for the planet we inhabit—our "common home," as Pope Francis (2015) called it in a document as remarkable as it was groundbreaking, the *Laudato Si′* encyclical letter. It encompasses a profound awareness of the planetary and human risks we run, in the context of the climate emergency we are already going through globally. Educating for entrepreneurship must necessarily also mean educating for respecting the Other, using increasingly sustainable strategies (United Nations, 2011), otherwise human dignity will be violated—take, for example, the figures on the precarious exploitation of migrants (Morales, 2023), often related to unregulated investment sectors.[1]

Educating for entrepreneurship must therefore also mean educating for citizenship and human rights (Baumann-Pauly & Nolan, 2016), without which entrepreneurship could lead more to speculation and exploitation, particularly socio-economic, than to sustained and sustainable development for the benefit of all (Jardim, 2022). Let us recall, for instance, in a historical context (Franco & Fiolhais, 2019; Franco & Pinto, 2014) and going back centuries, that slavery was one of the main economic pillars of the societies of the time. Particularly throughout the nineteenth century (Freitas, 2015), the debates on its abolition discussed the fact that, for

[1] According to Morales: "Globally, there are 281 million migrants worldwide, 2 including approximately 99 million male migrant workers (58.5%) and 70 million women migrant workers (41.5%) 0.3 Approximately 73% of all domestic workers are migrant women, representing nearly 12.7% of all women migrant workers. 4 Migrants, regardless of status, have contributed an estimated $702 billion in remittances in 2020, 5 alongside significant unmeasured contributions to societies through their work and participation in communities around the globe. Migrant labour has been central to the growth of the global economy. However, the human and social development returns of such contributions may be undermined if migrants are working in precarious or unsafe conditions that can have long-term consequences for their health and well-being" (Morales, 2023, p. 4).

some, it should be abolished considering the indignity of its meaning and action, and, for others, despite the gradual awakening of consciousnesses to the matter, it should be kept, since it was one of the economic mainstays of the time—even though it was increasingly seen as unworthy, slavery was still "a lesser evil" in the context of the societies of the time, as the Portuguese author Azeredo Coutinho considered it, to name one example (cf. Alves-Jesus, 2023, p. 644 ff.).

As educating is about making people understand in depth, educating for human rights, citizenship, and entrepreneurship also involves, first, delving into their most radical meaning, and then, starting from the basics, understanding the various layers of understanding that make up these subjects in a more complex and global way. Hence, according to Hannah Arendt (1961, p. 193), the need for educators to be able to articulate past and present, old and new, in order to better present today's world to children and young people.[2]

This systematized foray into the theoretical roots of human rights has recently come under the spotlight as part of an international initiative: the *Dignipédia Global* project.[3] Using it as a testimony to a differentiated educational strategy, we will try to present, analyze, and problematize the need to delve into fundamental issues such as human rights in order to pave the way for more prosperous and innovative futures, but also more sustainable, just, and humane ones, for all.

2 Exploring the Complexities of the "Rights Talk": Challenges and Opportunities

Notwithstanding the permanent hurdles regarding the respect for justice, peace, and equality (see e.g., Moyn, 2018), human rights remain on the public agenda and continue to be one of the most reminded topics, both in political and social speeches, and in the international relations arena, as well as in the ordinary language used in citizenship procedures. It also continues to be widely disseminated, namely, by the media. Based on the protection of the utmost human dignity (Novais, 2015), the appeal to rights has gained considerable manifestation in contemporary society.

[2] According to Hannah Arendt, one of the reasons for the educational crisis in the modern world is this difficulty to articulate old and new: "The real difficulty in modern education lies in the fact that, despite all the fashionable talk about a new conservatism, even that minimum of conservation and the conserving attitude without which education is simply not possible is in our time extraordinarily hard to achieve. There are very good reasons for this. The crisis of authority in education is most closely connected with the crisis of tradition, that is with the crisis in our attitude toward the realm of the past. This aspect of the modern crisis is especially hard for the educator, to bear, because it is his task to mediate between the old and the new, so that his very profession requires of him an extraordinary respect for the past" (Arendt, 1961, p. 193).

[3] The project number 253118, "Dignipédia Global," received a grant from Iceland, Liechtenstein and Norway through the EEA and Norway Grants Fund for Active Citizenship. The project's aim is to focus on systematising, deepening and defending Human Rights within the context of globalisation. As per the online platform: https://dignipediaglobal.pt/.

Nevertheless, it has not always been subject to the most appropriate use, and sometimes there is a discourse of instrumentalization and trivialization of such rights ("rights talk"). On the other hand, the diversity of struggles for dignity, assumed in a rights "pluriverse" (Santos & Martins, 2019), is often based on fuzzy methodologies (Canotilho, 2008), which hinder a full understanding of the rights, as well as restraint the guarantee of their fair enforcement in equal circumstances for all (Rocha, 2001; Rocha-Cunha et al. 2019).

There are several scientific fields that demonstrate reinforced research, analysis, and in-depth knowledge on the issue of human rights (Lewis & Skutsch, 2001), namely, within legal, political, and social sciences. However, within the scope of the human sciences, namely, in historiography (despite the arising of some relevant contributions from a partial perspective on the subject: e.g., Beleza et al., 2020; Homem & Brandão, 2015), there is still no systematic work in Portuguese on the matter.

3 Advancing the Methodological and Conceptual Understanding of Human Rights

In this sense, the *Dignipédia Global* project (EEA Grants—Active Citizens Fund | Programa Cidadãos Ativ@s—Calouste Gulbenkian Foundation/Bissaya Barreto Foundation) aimed to contribute for analyzing and studying human rights, from a historiographical perspective. It also aimed to proposing a systematic approach to its conceptual universe, looking forward to building a broader and more up-to-date knowledge on the subject, which goes far beyond its strict acknowledgement as a legal concept. As such, and from an interdisciplinary perspective (Pollmann & Lohmann, 2012), *Dignipédia Global* intended to offer an extensive survey on the support terms for the vast field of human rights as a research subject and as a practical application. This is not only within its more immediate field of recognition—the legal one—but also as an expression of a broader historical-cultural structure. The thematization, systematization, problematization, and conceptual development of the broad methodological and semantic universe that underlies this area was also proposed, with a view to an increasingly rigorous and in-depth knowledge on the theoretical field of human rights, but also as a fundamental tool for an informed and adequate reinforcement of its diversified practices (legal, socio-political, activist, educational-pedagogical, etc.) (Coomans et al., 2010), always bearing in mind the need for its engagement and effectiveness between the global and the local (Bris, 2021).

The human rights field sometimes deals with methodological gaps and inaccuracies. For an in-depth understanding of this field, interdisciplinarity is an advantage (Pollmann & Lohmann, 2012), not seldom is there a divergence/ignorance amongst the various fields related to it, as well as methodological inadequacies in their interrelational treatment (Coomans et al., 2010). At the same time, the definition of terms

is often neglected, sometimes resulting in vague perspectives on the topic ("bundle of words") (Almeida, 2012). The availability of knowledge systematization tools is a fundamental starting point for understanding what is known about a given subject. This type of tools often points to new grounded investigative paths, as well as helps provide a broad, but also critical, conceptualization of the topics at hand (cf. e.g., Franco, 2018). In the human rights-related fields, there are some international systematization tools, namely, dictionaries and other encyclopedic works. Among other contributions (dated works, with their first editions in the twentieth century, with approximate or less scope than more recent editions), the works by Adriantsimbazovina et al. (2008), Viale (2008), or Fomerand (2014) stand out. These works are relevant contributions to the systematization of knowledge on human rights, providing a conceptual corpus and a set of useful tools, also through their annexes (namely chronologies and transcription of paramount texts), for a structured in-depth study on the theme. Regarding an in-depth systematization in historiographical terms, however, they fall short of a more comprehensive and necessary approach for a critical and panoramic knowledge on human rights, which is able to encompass different lines and spatial-temporal nuances from which theories and practices, global and local, of these same rights are made (Bris, 2021).

In a long-term perspective, based on a balance between awareness and building of the notion of human rights throughout history (Steearns, 2012; Ishay, 2008), not only in the legal field, but also on philosophical, religious, political, social, and cultural perspectives (cf., e.g., Soromenho-Marques, 1991), the *Dignipédia* project aimed to offer a comprehensive methodological-conceptual contribution on the field of human rights, namely, through the two completed dictionaries (a global and a pedagogical dictionary), and through the capacitation and sensitization activities carried out with the project's target audiences. It is intended to be freely accessible online, just a click away, useful for the scientific community in general, but also to the general public, young people, and children, with a view to the wide dissemination of informed and critical knowledge about human rights.

4 *Dignipédia Global*: Different Pedagogical Strategies to Deepen and Defend Human Rights

Aimed primarily at school-age children and young people, the *Dignipédia Global: Systematize, Deepen and Defend Human Rights in the Context of Globalisation* sought to achieve objectives that would raise awareness on human rights, taking into account the multiple political, social, socio-economic, religious, cultural, and environmental challenges that today's societies face all over the world.

The project's implementation sought to achieve the next main goals: (1) to methodologically strengthen the field of studies on human rights, in Portuguese language, having in mind its further accurate systematization and problematization, with a special focus on the historiographical field, but, through an interdisciplinary

team, to a large extent opening up to various areas of human and social sciences that work on it; (2) through a global open access digital platform, to build and to offer methodological tools, created from scratch and for the first time in Portugal, which are able to systematize, clarify, and subsidize several areas of research and actions that have human rights as their main object of analysis and/or action, with scientifically validated knowledge; (3) to strengthen the study, debate, and sharing of human rights implementation, indicating the need, on the one hand, to attend to the awareness of their historical production (as the primary support on which several of the current theories and practices are based, which are fundamental for the construction of peace, justice, and global sustainability), and, on the other hand, to disseminate essential knowledge, under a permanent revision and through open access, which can help the daily and informed exercise of human rights, in every part of the world.

In order to achieve these objectives, the team gathered for the project initially worked on the *Global Dictionary of Human Rights* (GDHR), which involved a wide range of scholars and human rights experts (more than 150) from various fields of knowledge. Once this theoretical stage of the project, which served as the basis for launching the second, theoretical-practical part, had been completed, work began to be carried out primarily with the project's main target group: children and young people (although training activities for researchers and teachers also continued). This theoretical-practical component of *Dignipédia* was fundamentally aimed, on the one hand, at developing the *Pedagogical Dictionary for Human Rights* (PDHR) and, on the other hand, it allowed the project's core team to develop different strategies to engage a spirit of discovery, understanding, and critical deepening of human rights among children.

The PDHR was drawn up from scratch by children and for children, together with their teachers and in the context of various subjects in the curriculum, in an interdisciplinary exercise to address rights. Three school groups in mainland Portugal and 1 school in the Autonomous Region of Madeira were close partners to the initiative (although the project also attracted interest from other schools that joined in, totaling about 30 schools involved). As the entries were being conceived, illustration workshops were organized, in which children, through artistic expression, have drawn their ideas about human rights that they were putting into words in the PDHR entries. This tool, also produced in Portuguese for the first time, is likewise (given its dimension open access format) the first international version of a work with such scope; no other tool systematizes the theme of human rights for children and young people in such a broad way and in the open-access dictionary format, produced by children and young people themselves in a school environment.

The development of differentiated strategies to raise awareness on human rights was also one of the main concerns of the project's core team, which resulted, among other things, in the conception from scratch of a playful *treasure hunt* game, to sensitize children to their rights.

The progress made in implementing the project has shown the great interest that the subject of human rights continues to arouse. The dynamics developed allowed for the visible active and interested participation of those involved. The *treasure hunt*-like dynamics, developed from scratch by the project's core team, was one of

the distinctive outcomes produced within the scope of this project, with an immediate impact on *Dignipédia*'s target audience. After reflecting on Human Rights Education (HRE) activities, in particular based on tools such as *Compasito* (AA.VV 2009) and *Compass* (AA.VV 2012), the team sought inspiration, conceived and developed a differentiated HRE tool, which invites children to participate outside the classroom and allows them to recreate an imaginary game in the whole school space—a *small world of rights*—which can be reproduced in any school space in a more or less adapted form. The children were divided into groups of 5 to 7 individuals. Each group was given "The Incredible Map of Human Rights." The map identified seven human rights: the right to education; the right to inclusion; the rights of people with disabilities; the right to water; the right to food; the right to privacy; the right to biodiversity. Each of these rights had a respective station hidden in advance in seven different places within the school (the station for the *right to water,* for example, was always placed in a place where children usually drank water—a fountain or a faucet -; the station for the *right to food* was placed in the place where children usually ate—the canteen, or the bar).

The *treasure hunt* dynamics was then divided into three stages, corresponding to three different levels of progressively increasing complexity and challenge. In the first part, the children were challenged to search the entire school grounds for the seven stations corresponding to the seven rights, where they collected a task to be carried out as a group; in the second part, the groups returned to the starting point to solve the seven tasks related to each of the seven rights mentioned collectively within each team; the third part was dedicated exclusively to the children presenting the results of the game, defending and debating with their friends their group's results on the rights they had worked on during the activity.

This *treasure hunt* dynamics turned out to be very inclusive for all children (in particular, the project also involved wheelchair users). The positive impact on the children who took part in the game was also measured immediately at the end of several sessions, by applying a fun assessment strategy (good practice): using balls in three colors, the children assessed the session they had just experienced: those who hadn't liked it chose a red ball; those who had been somewhat dissatisfied chose yellow; those who had liked it and wanted to repeat the experience chose green. Very high levels of satisfaction were achieved with the application of such pedagogical dynamics.

This project, which was implemented nationwide (Portugal), endeavored to achieve its objectives in the different geographical areas it set out to: it covered urban areas, but also low-density areas, from the coast to the inland and islands. The results were largely reflected in the proposed indicators, and even exceeded the contracted targets. For the "Number of young people mobilized for human rights activities" indicator, a total of 4289 children and young people were mobilized (surpassing the initially proposed figure of 3540 children and young people); for the "Number of professionals trained" indicator, 583 teachers and researchers were trained (surpassing the initially proposed figure of 370 professionals); 11 campaigns were implemented, surpassing the 10 campaigns initially proposed under the "Number of awareness campaigns implemented" indicator. The *baseline* reference,

which was 56% at the start of the project, on the "Percentage of the target group showing concern for human rights" outcome indicator reached 86% at the end of the project, demonstrating that a considerable increase (not only above the 15% contracted, but also above the EEA Grants recommendation for this type of project ("large projects")—about 20%) was achieved.

5 Final Remarks

In the globalized world we live in, where more and more "the flutter of a butterfly's wings" in one place can have significant impacts "on the other side of the world," addressing the need to raise awareness to the fact that we live together in a "common home" becomes a real priority. Integral and integrated education on human rights, global citizenship, and entrepreneurship, always bearing in mind the need for social responsibility (Calheiros, 2019) and the protection of human dignity (Franco, 2019) and the environment are goals that deserve our special attention, both within academia and civil society.

The promotion of tools and resources that are increasingly adapted to the educational needs of each and every one of us, and that are scientifically developed and validated, will allow us to deepen our knowledge on issues that are sometimes so current and relevant, but in many cases always deserve new perspectives and new strategies for deepening and critical understanding, as is particularly the case with the issue of human rights.

As good practices for a more active and entrepreneurial citizenship, but also more aware of inequalities, social injustices and the rampant climate emergency we are currently experiencing, pedagogical strategies offered by initiatives such as the above-mentioned *Dignipédia Global* project make it possible to reach more and more people, particularly children and young people—and future generations who will continue to grapple with fundamental rights issues. The importance of access to knowledge and to an increasingly in-depth and scientifically validated understanding of human rights is in focus within the scope of *Dignipédia Global*, particularly through renewed pedagogical strategies that aim to combine in-depth research into the theoretical roots of subjective rights with their critical understanding and their activation in practice, no matter where they are put to practice, also through the open access digitalization of fundamental resources (https://dignipediaglobal.pt/).

In our increasingly global and digital world, it is becoming urgent to pay attention to the fundamental principles that allow us to steer our planetary existence, in balance between human beings, but also in balance with the whole world around us. Educating in an integral and integrated way for human rights, citizenship, and entrepreneurship allows us to foster our society's values, but always in the awareness of respect for the dignity and place of the Other—a mirror of myself. So too, with regard to the relationship between entrepreneurship and human rights, and according to Jacinto Jardim (2022), "incorporating human rights into entrepreneurship is

not only an ethical necessity, but also a beneficial strategy for companies and society to stimulate innovation, social justice and sustainability."[4]

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Promoting Differentiated and Ethical Human Resource Management

Maria Elisete dos Reis Martins Ferreira, Maria Manuela da Costa Teixeira, and Mónica Sofia Cardoso

Abstract This study aims to promote differentiated and ethical Human Resource Management (HRM). It highlights a new paradigm shift that holistically considers the balance between employee well-being and the organisation's objectives. This approach ensures that both parties can achieve their desired expectations in an ethical and fair manner. A theoretical and reflective review with a descriptive and exploratory thematic analysis was chosen as the methodology. Books, magazines, and scientific articles were used to explore the link between ethical procedures in HRM and their role as an elementary stimulus in promoting equity in an organisational culture that aims to adopt fairer and more responsible conduct. After identifying ethical HRM practices, it is crucial to change patterns and assign responsibilities and commitment to organisational management to implement significant changes that highlight the ethical relevance in policies and practices currently lacking in this area. Finally, it was emphasised that, today, HRM must dedicate itself to promoting differentiated and ethical management that aims to frame exercises supported by robust foundations, evidencing conduct that is guided by ethical, responsible, sustainable, transparent principles and appeals to reciprocal respect, starting with conducts that nurture the example of the applicability of the values that are mirrored by the organisation's culture, by commitment, internalised and passed on by its leaders. Thus, in conclusion, the practices developed by HRM should focus on the differentiated and

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J. Jardim (ed.), *Entrepreneurial Education in a Global and Digital World*, Studies on Entrepreneurship, Structural Change and Industrial Dynamics,
https://doi.org/10.1007/978-3-032-17008-8_13

ethical promotion of their practices, to reward adjusted behaviours and prevent the development of effective strategies, and to implement measures that adjust to the observable unethical behaviours of both their leaders and their followers.

Keywords Commitment · Organisational culture · Ethics · Management · Leadership · Human resources

1 Introduction

It is widely accepted that ethical procedures adopted in the field of Human Resource Management (HRM) can be a positive stimulus to activate differentiated behaviours regarding the promotion of equity in the procedures of an organisational culture that may aim at the adoption of fairer and more responsible conduct, about justice and fairness in organisations (Greenwood, 2002). Currently, the reputation of organisations in the markets is not merely limited to the quality of the services and products they offer, despite their fundamental importance and the rigorous refinement of customers in terms of quality and sustainability. In this context, the ethical component is introduced, which is essential to align with the values that guide new mentalities and consciences towards the finiteness of planetary resources.

However, the incongruity that we witness daily highlights the spread of internal norms and, sometimes, ethically well-prepared codes, but anecdotal, since they do not serve their real purpose and disagree with the reality experienced by employees and the ethics that they advocate and that they experience in terms of applicability by the organisations to which they belong. This inconsistency has a detrimental effect on the organisational culture, highlighting maladjusted behaviours and phenomena, such as corruption and falsehood, which can provoke and condition public opinion through negative images and ethical offences. These can sometimes result in fines and damage to the brand itself, with incalculable and challenging-to-overcome costs.

In this sense, we have witnessed the behavioural changes that organisations have been adopting in their practices, through the stimulation of attitudes that aim at commitment, social responsibility, and citizenship, demonstrating ethics in their conduct to all their stakeholders. According to Ferrel et al. (2001, p. 7), "Ethics deals with the internal values that are part of the organisational culture and shapes decisions regarding social responsibility with respect to the external environment; ethics affects the decision-making process; ethics and competitiveness are independent because no organisation can achieve longevity when people try to deceive each other, try to take advantage of each other, being dishonest. Social responsibility is the obligation of management to make decisions and take actions that will contribute to the well-being and interests of society and the organisation".

Management based on differentiation in the adoption of ethical procedures in human resources practices should focus on implementing innovative strategies to address employees throughout all the processes underlying them. Thus, ethics can

be conceptualised "By the behaviour (…) by the attitude (…) of each one. By codes that express the posture of the whole, to which the attitude of each one contributes, in the face of a whole of ideals, values and behaviours. Moreover, because the attitude of each one could lead to a scattering of efforts, it is necessary to establish a guiding thread that, oriented towards convergence, turns the organisation into a whole" (António Almeida Júnior, 2002/2022).

In this sense, training in this area is a common practice, and it can be applied to employees, focusing on leaders and human resources managers. In this way, there can be a convergence in decision-making, in debates on everyday dilemmas, highlighting the integrity that must stand out in the workplace, such as those pointed out by Schirrmeister and Limongi-França (2012, p.3) "conflict resolution, the restructuring of work organisation, innovation in reward systems (financial and non-financial) and improvement in the work environment, such as climate, culture, environment, ergonomics and assistance".

It is worth highlighting that human resources managers face ethical challenges when determining the policies and procedures to adopt, as these must align with the organisation's ethical values, particularly in areas where the department's inherent practices create value for the organisation through its people.

In this context, we emphasise (i) recruitment, selection and hiring, translated into impartiality, based on technical and behavioural skills, without any discrimination; (ii) Induction and socialisation, which needs to be personalised in order to promote a positive image of the organisation and have a positive impact on the new employee; (iii) Training, which due to its importance requires a close look, emphasising that while legally mandatory, organisations in their needs assessment must adjust their planning to the organisational strategy, enabling the growth of employees, both personally and professionally, in order to comply with the vision outlined by the organisation. It should skillfully include specific competency development programs and career growth and development opportunities, motivating and encouraging them to continuously improve their skills; (iv) Performance evaluation, as an essential tool for areas that are closely related to employees and teams, should be implemented clearly, reflecting objectives and measurable criteria, to allow recognition and reward for differentiated performance, as well as the need to create training and career plans, through the data presented by the system; (v) Remuneration management should be equitable, guaranteeing fair salaries and benefits that can keep up competitively with the market niche to which the organisation belongs, considering the technical and behavioural skills, experience, as well as the commitment and performance of employees. Promote recognition and ensure that the system is transparent and merit-based; (vi) The inclusion of the promotion of the ethical component in human resources practices helps organisations to promote a robust culture, supported by values that inspire trust, honesty and mutual appreciation, which promote the well-being of employees, counselling, rehabilitation, moral and sexual harassment, confidentiality and have a positive impact on the reputation of the image that surrounds the organisations and their respect for sustainability; (vii) Reflecting the organisation's social responsibility, promoting a differentiated reputation, expanding stakeholder confidence levels in contributing to a more

sustainable planet, highlighting the commitment to the community and employees (Gramberg & Menzies, 2006). Through the adoption of ethical procedures, demonstrating and disseminating reports prepared with measurable metrics regarding the company's practices, demonstrates the care and connection with ethical, social issues, goals and implementation of sustainability programs, there will be an ethical commitment to all procedures emanating from the human resources department and, at the same time, highlights all information about the activity for its target audience. The selection of a theoretical-reflective review, utilising descriptive and exploratory thematic analysis, facilitated the integration of the ethical procedures operationalised by human resources management professionals and the organisational culture. This approach aimed to encourage fairer and more responsible attitudes, ultimately leading to a commitment from both workers and management to achieving organisational success.

2 Literature Review

2.1 Ethical Leadership as a Competitive Advantage

New leadership models emphasise authenticity and spirituality as a means to serve those they lead by example, demonstrating ethical, principled, and honest behaviours that clearly show empathy and focus on interactions with their employees. "People who have reached high levels of authenticity and who know who they are, what they believe in, and their value, and who act in accordance with those beliefs and values while interacting transparently with others" (Avolio et al., 2004, p. 802). To do this, "it is increasingly necessary to work with discernment, trust and loyalty in people and in the company's values, to empower people for change, to transform competence and active goal planning in the company, so that everyone feels motivated" (Teixeira & Martins, 2021).

We point out that the construction of this construct brought together imperative changes that pointed to new paths to be followed, highlighting the need for adjustment between a new vision of sustainability and inclusion that permeates the new green HR policies. With crises that threaten to annihilate the planet, notably the climatic ones, the problems associated with global health that have altered the traditional model of relationships and work, as well as the social values that have dictated individual rather than collective priorities, have provoked the need for leadership to face new challenges.

The uncertainty to which competitive global scenarios have placed organisations on high alert, in order to be able to remain competitive in the market niches to which they belong, has forced leaders to give appropriate responses to stakeholders, in order to create value through people, since "workers have knowledge and skills that managers do not" (Rothenberg, 2003, p. 1779), in complex and increasingly digital scenarios. This trend involves the imperative of using a new high-performance

leadership model that contemplates the sharing of strategy, trust, and adaptability among peers and collaborators, having as its driving force passion and skills adjusted to the organisational vision and its impact on HR policies, which are more committed to creating synergies to trigger joint learning and contemplate their evolutionary and entrepreneurial purpose. Organisations do not live in a vacuum; on the contrary, they are integrated into the society of which they are a part and from which they receive a greater or lesser cultural influence, which varies from region to region. "Moreover, in the analysis of the culture of an organisation, it must be framed in the national culture of the country in which it is located" (Teixeira, 2005, p. 201).

This new paradigm shift places on leadership the ability to change crystallised concepts that involve humanisation and the voluntary involvement of all leaders in the co-creation of value for the organisation, adopting differentiated and ethical joint practices, aimed at improving key HR areas, through career plans capable of retaining the talents that are part of the company's staff, invigorating policies inherent to the complexity of salaries and compensations, which should provide for the equity of the effort and performance of employees, in order to provide the previously outlined impact on the achievement of organisational success.

For effective results to emerge, it is necessary to promote an organisational learning climate between leaders and followers, enabling them to grow continuously and together (Avolio & Gardner, 2005). The inclusion of authentic leadership in organisations becomes an injunction practice to create links between their purpose and the most appropriate way to adapt to the adversities that continuously emerge and require rapid responses, guided by the ethics and values that guide them, highlighting that ethical leadership provokes results in the expected trust in leadership itself, associating it with the levels of satisfaction of the led in their functions, organisational commitment, talent retention and, essentially, the facilitation of effective communication promoting learning (Avolio & Gardner, 2005). This perception of ethical leadership provokes behaviours associated with organisational citizenship.

2.2 Ethical Commitment and Its Effects on Human Resource Practices

The buzzword "*commitment*" has been highlighted by leaders who, in ethical terms, have proven insufficient to establish the desired differential. Top-down communication in this context should be truthful and communicated to all subordinates so that it is internalised and practised by example. "The demonstration of normatively appropriate behaviours through personal actions and interpersonal relationships and the promotion of such behaviours in followers through two-way communication, reinforcement, and decision-making" (Brown et al., 2005, p. 120).

In this context, the need for transparency and open channels in all directions is emphasised, allowing the message to flow freely. Feedback can be received positively or negatively, so that all members of the organisation understand the message

and feel comfortable expressing the good and bad behaviours that plague their daily lives, "a type of sustainable HR that focuses on environmental problems" (Piwowar-Sulej, 2021, p. 76), promoting differential and ethical management procedures through the inclusion of good organisational practices.

> Sustainable Development is a global challenge of the United Nations, embodied in the 2030 Agenda, but it is also an alternative path to building a world where everyone shares in the wealth created, through its creation in a sustainable way and its distribution in a fair way, leaving no one behind.
>
> Mário Parra da Silva, President of the UN Global Compact Network Portugal.

Today, the commitment of organisations to sustainability is undeniable. According to Madero Gómez et al. (2022), adopting and monitoring environmental commitments with suppliers requires the use of greener, more ecological, and socially responsible practices with all organisational partners, enabling HR to create competitive advantages and evidencing its participation in the formation of new habits of both employees and consumers, through ethical inclusion, aimed at protecting the environment.

In this sense, the organisation's commitment to ethical practices is reflected throughout its value chain, from inputs to outputs. This commitment is evidenced by the use of more careful energy resources, the adoption of eco-points that identify areas for selective waste collection, raising awareness about paper reuse, and promoting the use of digital processes whenever possible. Additionally, the organisation provides opportunities for the local community to engage in ecological or social volunteering initiatives. These actions collectively highlight the organisation's differentiated and ethical concern for its local residents and the surrounding ecology.

> Corporate social responsibility is, essentially, a concept according to which companies decide, voluntarily, to contribute to a more just society and a cleaner environment […] This responsibility is manifested in relation to workers and, more generally, in relation to all stakeholders affected by the company and which, in turn, can influence its results. (European Commission: Directorate-General for Employment, Social Affairs and Inclusion, 2001)

In relation to HR policies and procedures with sustainability, Ehnert et al. (2016, p. 90) mention that "the implementation of HR strategies and practices that allow achieving financial, social and ecological goals, with impact inside and outside the organisation" is based on:

(i) Adopting digital processes that support recruitment and selection practices, checking on entry if candidates possess ethical and socially responsible practices through job descriptions, and if they are aligned with those practised by the organisation.
(ii) Using the creation and update of the database, which could be made available online.
(iii) Including awareness of the ethical and sustainable practices adopted by the company in the socialisation and integration process of new elements, highlighting everyone's commitment to this value.

(iv) The mandatory professional training plan should allow the possibility of including environmental concerns in the needs assessment and making all relevant material available (asynchronous or synchronous), promoting the use of new communication and information technologies in the balance of personal and professional life of collaborators, highlighting environmental concerns.
(v) The performance evaluation process, according to Bombiak and Marciniuk-Kluska (2018), should promote the development of a disciplinary system that progresses with the adoption of environmentally friendly conduct. To achieve this, it will be necessary to review and add metrics that include the ethical component and environmental management, both for the individual and for the team to which the employee belongs.
(vi) The importance of the rewards system encompassing monetary awards in its process when ethical and environmental objectives are achieved.
(vii) The organisational culture should insert its differentiated and ethical commitment to sustainability into its vision and mission statement.
(viii) Organisational leaders should be part of the teams and, together with those led, involve themselves in annual activities dedicated to this commitment "based on the knowledge that employees and managers have of the past, in the way things are done, as a result of the continuity of actions" (Teixeira, 2005, p.203).
(ix) Cultivating green HR practices within the organisation, through the example of conscious energy use, promoting the use of green mobility policies, reducing carbon emissions, and highlighting differentiated and ethical promotion in human resource processes. "(…) from a classical conception of the company as the basic unit of economic production, exclusively oriented towards profit, towards a concept of a company that, in addition to being economic, is also, and fundamentally, a socially, culturally and ecologically responsible entity" (Jesus, 2002, p. 5).

2.3 Effects of an Ethical Organisational Culture on Organisational Success

The foundations of conduct guided by ethical, responsible, and transparent principles, and appealing to mutual respect, begin with procedures that nurture the example of the applicability of the values reflected in the organisation's culture, internalised and shared by its leaders. "The values associated with an organisation's culture are not exhausted by the values instilled by its founders. In addition to these, others develop in response to the specific environment of the company, in relation to the needs of its members. Identifying four sources or origins of an organisation's culture: history, the environment, personnel policy, and socialisation" (Teixeira, 2005, p. 203). It is usually accepted that basic assumptions, values, beliefs, and

expectations are embedded in organisational culture. "An organisational culture that supports environmental management encourages employees to make suggestions and have the freedom to engage in activities that improve the environment" (Renwick et al., 2013, p. 7), reflecting the investment in differentiated and ethical management, through the promotion of procedures aimed at improving the actions adopted and adjusting to new standards that, undoubtedly, cannot be neglected. In this sense, it is urgent to implement an ethical culture that promotes new procedures since it is "(…) a permanent dynamic element, or a process of accumulated learning, of learned responses originated by expected values, shared by certain groups, globally integrating behaviors, emotions and cognitive elements of the psychological functioning of its members" (Sampaio, 2004, p.76). Through these concepts, Sampaio (2004, p.76) metaphorically refers us to the comparison of an iceberg, so that "on the surface are the open aspects such as: objectives, technology, structure, policies and procedures and even financial resources. Submerged, we have the hidden or informal aspects of organisational life. In these, we have perceptions, attitudes, and feelings, as well as a set of shared values about human nature and what the organisation can contribute to society". We emphasise that layers of support for organisational culture are visible in the internalisation of beliefs, stories, values, routines, and so on. However, after its crystallisation, it becomes challenging to change its characteristics that circumscribe the business culture itself and according to Banks and Nohr (2008) are visualised in the norms and levels of behaviour that employees adopt to distinguish what is good or bad, what is right or wrong, since it is part of the habits acquired by the participants and shared among all the elements that make up the staff of an organisation (Table 1).

Table 1 Supporting definitions

Autores	**Definição**
Cunha et al., 2013, pp. 12–13	"Leading as a leader means encouraging change, not finding excuses for what allegedly cannot be changed". "The act of leading, of being a true leader, is something very (...) demanding, difficult, and complex".
Chiavenato, 2003, p. 157	"Leadership is necessary in all types of human organisations, especially in companies and each of their departments".
Caravantes et al., 2009, p. 140	"Leadership is the process of developing ideas and a vision, living according to values that support such ideas and vision, influencing others to incorporate them into their own behaviours, as well as making difficult decisions about people and other resources".
Maxwell, 2008, p. 13	"Willingness to take risks; a passionate desire to make a difference; to be bothered by reality; to take responsibility while others try to justify their mistakes; to seize the possibilities of a given situation, while others only see the difficulties; ease of standing out from the crowd, opening the mind and heart; ability to let go of the ego for the benefit of what is best; to inspire people with a clear vision of the contribution they can offer us; power to improve many lives; to speak from the heart to those led; harmony of heart, mind and soul; sensitivity to the feelings of others; dream transformed into reality; bravery and nobility".

(continued)

Table 1 (continued)

Autores	Definição
Cacioppe, 2000, p. 48	"Successful business leaders of the twenty-first century will be spiritual leaders. They will be comfortable with their own spirituality and know how to nurture the spiritual development of others. Today's most successful leaders have already learned this secret".
Ferrel et al., 2001, p. 359	"It is a distinction between 'what can be physically done' and 'what can be ethically done".
Deimling et al., 2008, p. 1	"It is a continuous process activity of designing, implementing, and reinforcing the prevention and detection of unprofessional or unethical behaviour".
Perez & Cobra, 2017, p. 39	"The constant development of companies and their production processes, the search for cost reduction through the development of better production techniques, and the improvement of the quality of life of employees within the work environment have been a constant concern of companies around the world".
Sampaio, 2004, pp. 69–70	"Organisational culture is, therefore, culture in its anthropological sense existing in an organisation composed of practices, symbols, habits, behaviours, ethical and moral values, as well as principles, beliefs, internal and external policies, systems, jargon, and organisational climate".
Ashley, 2002, p.50	"It seems fair to say that nowadays companies need to be attentive not only to their economic and legal responsibilities but also to their ethical, moral, and social responsibilities".
Schiffman & Kanuk, 2000, p. 12	"Most companies recognise that socially responsible activities enhance their image among consumers, shareholders, the financial community, and other relevant audiences. They have discovered that ethical and socially responsible practices are not only good for business but also result in a favourable image and, ultimately, higher sales. The opposite is also true: Perceptions of a company's lack of social responsibility negatively affect consumer purchasing decisions".
Rousseau et al., 1998, p. 395	"Psychological state that encompasses the intention to accept vulnerability based on positive expectations of the intentions or behaviours of the other".
Rotter, 1967, p. 651	"The expectation of an individual or group that the words, promises, written or verbal statements of another individual or group can be trusted".
Wiener, 1982, p. 421	"Commitment as 'the totality of internalised normative pressures to act in a way that satisfies organisational goals and interests'".
Campos, 2008, p. 54	"The workplace is currently a cold and hostile environment that demands a lot, economically and psychologically. People are emotionally, physically, and spiritually exhausted. The daily demands of work, family, and everything in between erode individuals' energy and enthusiasm".
Allen & Meyer, 1996, p. 252	"Organisational commitment as 'a psychological bond between the employee and his organisation, which makes it less likely that the employee will voluntarily leave the organisation'".

Source: Research data

Research on selected articles and books reveals that ethical leadership as a competitive advantage, the impact of ethical commitment on HR practices and organisational culture, and the pursuit of an ethical culture for organisational success are all well-established and continuously debated topics. These concepts have been refined throughout history, drawing on increasingly sophisticated support, and have attracted significant academic interest due to their relevance for organisations.

However, our focus in exploring these established themes was on their application in promoting a more differentiated and ethical approach to human resource management in the context of today's organisations. We emphasise that these constructs are intricately linked to ethical values, principles, behaviours, and a culture that prioritises ethical considerations. This culture should be reflected in the practices implemented by HR professionals and accepted by employees and society. After all, these practices impact a wide range of stakeholders who, in today's world, increasingly demand transparency throughout the value chain.

3 Concluding Remarks

Human Resource Management (HRM) is not isolated from the new global challenges organisations face today. However, promoting ethical and differentiated management practices across all processes is crucial. This ensures that organisational strategy goes beyond mere survival and profit-driven productivity. Humanistic responsibilities must be factored in to support the well-being of all employees, regardless of their level of responsibility. This necessitates implementing tools that encourage ethical behaviour—a cornerstone for authentic leadership that values humility, fairness, encouragement, good character, and generosity.

To achieve this, differentiated and ethical HRM should be built on clear goals, supported by inspiring values, and promote positive personal and professional practices. These are essential for the inclusion of diverse talent that forms the fabric of modern businesses.

The ongoing global changes present an opportunity to reflect on the cultural shifts we see in everyday organisational life. These changes are driven by factors such as exploring new markets, relocating for resource proximity, or managing personnel costs, all of which require an ethical component in their execution. Additionally, the global transformation of the human resources landscape offers a broader range of career paths for individuals with a blend of behavioural, linguistic, technical, ethical, and social skills, targeting improvements in living standards.

Consequently, adaptability to host countries' laws, climate, and culture becomes imperative for HRM. This requires fostering dynamism and flexibility to prepare employees for integrating new team members from diverse backgrounds and equipping staff for potential expatriation.

Looking back at HRM's history throughout economic cycles, the rise of globalisation and artificial intelligence, and their impact on processes, must be

continuously monitored. This ensures ethical and differentiated conduct in this vital area for organisational success.

This scenario highlights the need for continuous action against unethical practices observed in HR management. A significant shift towards seeking external guidance is crucial for HR professionals to adapt their practices to the current environment and circumstances (Rego et al., 2015). The use of tailored and strategically implemented tools is essential to promote ethical behaviour in HR professionals (Andrade et al., 2017; Nunes, 2013). This will lead them away from potentially unethical practices condoned by leadership and towards procedures that gain employee acceptance through validated assessment tools based on ethical practices and a commitment to the organisation's culture.

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Storytelling, Innovation, and Entrepreneurship

Fernando Dolabela and Eduardo Dolabela

Abstract This essay argues that storytelling is the most powerful language for inspiring innovation and shaping entrepreneurial mindsets. It contrasts the emotional impact of narrative with the limited reach of traditional academic writing, largely designed for peers rather than for actual or aspiring entrepreneurs. Drawing on recent works in entrepreneurship, economics, philosophy, and history, it shows how life stories—especially those that include failure, uncertainty, and ethical dilemmas—become vehicles for learning, identity formation, and cultural change. Entrepreneurship is best understood not as a set of techniques, but as an "art of living" comparable to ancient philosophical schools, in which narratives, exemplars, and daily practices guided the pursuit of a meaningful life. Focusing on the Brazilian context, the essay goes on to recover an entrepreneurial tradition obscured by dominant historiography and to contrast the cultures of employment and entrepreneurship. Finally, it argues that innovation, creativity, and the arts share a common root in narrative imagination, and that entrepreneurial education should therefore place stories—rather than formulas—at its core, helping individuals become authors of their own lives and co-creators of the future.

Keywords Storytelling · Entrepreneurial education · Narrative · Creativity and the arts · Innovation

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J. Jardim (ed.), *Entrepreneurial Education in a Global and Digital World*, Studies on Entrepreneurship, Structural Change and Industrial Dynamics,
https://doi.org/10.1007/978-3-032-17008-8_14

1 Introduction

I present in this essay a series of reflections stemming from my decades of experience in entrepreneurial education. They all revolve around a crucial point for me: the art of storytelling to inspire innovation and entrepreneurship. If, as an author, I have been able to contribute in some way to the improvement of entrepreneurial education, it was by doing precisely this, through my nonfiction novels. To help organize these reflections, translate them into English, and undertake the challenging task of adapting them, as much as possible, with an academic format—my literary career has always been independent, after all—I relied on the help of my son, Eduardo Dolabela, who is pursuing a Ph.D. in Ancient Philosophy at the Federal University of Minas Gerais (UFMG). He also contributed by offering insights on the similarities between entrepreneurship and philosophy. Not being a specialist in this field, it was a delightful surprise to discover, through Eduardo, that ancient philosophy can provide a foundation for entrepreneurial education. Much of what is written here is a record of the conversations we had, where each of us learned a little more about the other's ways of thinking and expressing.

2 Reality or Fiction?

In my book *The Secret of Luísa*,[1] the profile of the main character is shaped by two phases of her life. The first encompasses family, friends, early romances, dreams, and the everyday events that make up the existence of a young woman in a small town in Minas Gerais. In the second phase, Luísa seeks to fulfill her dream of starting a business in a field she loves, the making of *goiabada casão* (guava paste). These two moments blend to form Luísa's profile when she decides to become an entrepreneur. She later realizes that living and entrepreneurship intertwine—they are overlapping actions.

While writing this book, I was more captivated by the character's story than by the management tools and numbers. I felt the magical sensation of being guided by the dream of becoming a novelist. It felt like returning to adolescence, rewinding 30 years. My computer keyboard, much like the self-playing pianolas of old, autonomously shaped what should have been an essay into a novel…

My aim in writing this book was to persuade the reader to pursue entrepreneurship. I chose the novel format because entrepreneurship is intertwined with life itself. It's not a theory or content detached from the individual; it's a way of being and seeing the world. Emotion is the source, desire is the goal, and the way is the joy of pursuing a passion. I'm gratified to see that readers step into the shoes of the protagonist Luísa and bring her to life. The book is pure fiction; the only reality is the setting, the town of Ponte Nova. However, I receive emails and phone calls from

[1] Dolabela (1999). I've translated book titles, the originals are referred in the Bibliography.

people who want to meet Luísa personally. Recently, in Ponte Nova, the town in Minas Gerais where the book takes place, I heard a young manufacturer of *goiabada cascão s*ay that people ask her if she's Luísa.

Even today, people ask me about Luísa as if she were real. They want to chat with her, find out where she lives, if she has children, and if she married Eduardo (a character). One day, a woman I didn't know called me, a young woman, who wanted to talk about the book. She was someone with above-average critical thinking skills, and the conversation was going well. At a certain point in the long conversation, she asked, "Does Luísa still live in Ponte Nova?" I replied, "Luísa never existed, she's pure fiction." There was silence on the other end. I didn't understand. After a while, I heard a faint voice say, "I can't base my life on someone who doesn't exist." She was devastated and hung up the phone. We never spoke again. She proved that through the novel, I had managed to convey the emotion that is the essence of entrepreneurial action. An essay couldn't achieve such depth.

In the end, *The Secret of Luísa* tells a simple story set in a simple town, with a remarkably simple central character. And the emotions reveal that it's not always possible to distinguish reality from fantasy and that human beings comfortably navigate both dimensions.

3 The Secret of the Future

Do entrepreneurs read academic research reports? Of course not, because these are written for peers, meaning other researchers. In the field of entrepreneurship, the distance separating researchers from entrepreneurs is vast. Research aims to answer the questions of academics themselves and does not meet the needs of real-world entrepreneurs. Thus, the gap between these two groups keeps widening. That's why I invested in creating stories about the lives of entrepreneurs. I believe I succeeded because *The Secret of Luísa*, a nonfiction novel, sold 350,000 copies. Even after 25 years since its release, I still receive messages from entrepreneurs who use the book as a learning tool.[2]

Entrepreneurs don't have special traits that can be identified through scientific analysis. If they seem different, it's because they don't separate their work from their fundamental emotions. To them, retirement is an insult. As long as there's life, they want to work. By letting passion guide them, entrepreneurs reunify the human

[2] In a college in Bahia, where all students receive the book on their first day of class, an actress was trained to enter the classrooms and introduce herself as Luísa. Fiction and reality merge to create emotion where only reason once prevailed. Another one of my books, also a novel, is called *I Want to Build My Story* (Dolabela, 2009) and tells the cry of a child yearning for freedom. I also used a novelistic language in *The Magic Bridge* (Dolabela, 2009) to show young readers what entrepreneurship is. The main character is 11 years old and believes that children shouldn't be abandoned on the streets. In *A Time for Dreams* (Dolabela, 2000), I interview several entrepreneurs who share the drama of their professions. In *Children Are Entrepreneurs* (Dolabela, 2024), intended for parents and children to read together, I present a series of uplifting stories.

being split by industrialism into two—a working self and an emotional self. To inspire others to help realize their dreams, entrepreneurs tell stories about the future they desire. These stories aren't defined by certainty but by the unwavering desire to make them a reality. However, they differ from traditional tales of heroes and villains. Entrepreneurs don't believe that "hell is other people." On the contrary, they know they carry within themselves the seed of failure, the powerful villain they strive to conquer. Ironically, it's from failure that entrepreneurs draw the energy to achieve success.

4 A New Approach

I believe the romantic style of *The Secret of Luísa* contributed to its success, as I replaced the dryness of a technical essay with a story about love, dreams, pursuit, passion, connections and disconnections, failures, and successes. In short, a story about life. I think the emotions stirred by Luísa's journey magically convey what I want to communicate to those seeking to pursue entrepreneurship.[3] The nonfiction novel is the most suitable language to describe the entrepreneurial phenomenon.

Recently, one of the greatest authors in the field of entrepreneurship, my friend and mentor Louis Jacques Filion, emphasized this very point. During the 1980s and 1990s, he was among the researchers who published extensively to advocate for the emergence of a new academic discipline: entrepreneurship. However, after 40 years of research, courses, and lectures, he concluded that his latest book, *Agents of Innovation*,[4] will become a classic precisely because it is based on the premise that learning about innovation is best acquired through studying the fascinating lives of entrepreneurs rather than formulas and theories.[5]

Filion notes that over 85% of growing companies today are created and managed by teams where most members have no theoretical training in entrepreneurship or even management. Moreover, innovation is no longer of interest solely to business

[3] Educational expert Claudio de Moura Castro, in the foreword he wrote for *The Secret of Luísa* (Dolabela, 2024, p. 9–10), says that with this book, I was reviving an ancient tradition: "Two thousand years ago… a very effective preacher told stories instead of instructing people on how to conduct their lives. The stories of Jesus Christ are called 'parables,' and their power has endured over time. So, when my friend Dolabela writes a fiction novel to teach entrepreneurship, he is in good company."

[4] Filion, 2024.

[5] Filion (2024, p. xx) defines "entrepreneurs" as people who "not only conceive innovations but also create and implement them, usually in the form of new products and services, and establish a company to produce and sell them." The exemplary lives he presents include those of Coco Chanel and Alain Brochard. But he also recounts the lives of some "facilitators," Réal Plourde and Pierre Nelis, people who "envision process innovations that help entrepreneurs succeed and fulfill their visions and projects," as well as the "intrapreneurs" Elmar Mock and Emerson de Almeida, who "perform a role similar to that of entrepreneurs and facilitators but as creative employees within the organization that employs them."

and engineering students but to everyone, regardless of academic area or level. Because it presents stories, *Agents of Innovation* can be used in all fields, at all colleges, at all levels, from the first to the third cycle. It appeals to the general public.

It seems that the time has come to expand our approaches to entrepreneurship. Conventional research practices do not align with the peculiarities of this activity, which is inherently practical—a way of being—a field where paradigms cannot be established and which will never be a science.

Among those Filion wrote about in *Agents of Innovation*, I highlight the remarkable Professor Emerson de Almeida, founder of the Dom Cabral Foundation. He recently demonstrated the great potential that lies in entrepreneurial education if it adopts storytelling. In his excellent book *Walking Against the Wind*,[6] Almeida recounts the lives of people from humble backgrounds who ventured into entrepreneurship, some turning their dreams into large companies. Both books, Filion's and Almeida's, show that the trend in entrepreneurial education is to use stories of people from all walks of life who knew how to convert the energy of their dreams into positive value for society.

5 Teaching by Storytelling

We prefer reading stories rather than reading essays. We store stories in the heart, the place of dreams, and archive essays, analyses, formulas, and numbers on the shelves of reason. When searching for our best memories, we find emotions. It even seems that our memory was made to archive emotions only. Other information evaporates more quickly. While essays appeal to reason, stories speak to the heart, making them better understood and more easily recalled. Measuring an entrepreneur's success means evaluating the level of enjoyment and emotion they derive from their work. Dreams are children of emotion that ask reason for help in being realized. Stories kindle originality and lend themselves to different perceptions and interpretations, offering a delicious dish that nourishes imagination, creativity, uniqueness, and fantasy. After all, entrepreneurship is an art.

The talent for storytelling is what makes us human. Since our origins, we have created myths that transport us to an otherworldly realm where we spend most of our lives. As stories evoke emotion and are more easily retained in memory, they make an excellent vehicle for learning. And also for creativity, as our imagination accredits us as co-authors of the stories we hear.

Academia doesn't tell stories. On the contrary, it removes emotion from texts and classes, treating it as disposable excess. It doesn't consider informal, subjective learning, absorbed outside of school through friends, taxi drivers, market vendors, or Internet users. Academia offers teaching, while networks of people open other doors to learning. Stories, the habitat of emotion, transform uninteresting topics

[6] Almeida, 2023.

from the business world into engaging plots. As a teacher and writer, I prefer telling stories about the arid topics of a business, because at their core, they're plots generated by emotion.

Entrepreneurship is living. All that entrepreneurs want is to transform an idea into a product and sell it. They aren't drawn to topics like marketing, finance, or management. Most accept them as necessary evils. Marketing, finance, and production experts rarely tell stories to propagate knowledge. In a support program for emerging high-tech entrepreneurs, I asked marketing and finance professors to tell stories like they happen in real life. It didn't work. What I told them went through their minds from one ear to the other without making a stop…

I'm amazed at how limited our access is to the emotions that have motivated geniuses or ordinary people throughout history to transform the world. Every work, regardless of genre, should reveal (as religions do) the emotions, passions, dreams, or failures that motivated its creator. Christ conveyed his thoughts and love through parables. When the motivating passion is not public, it gives the impression that revolutionary works by scientists, artists, writers, entrepreneurs, and all innovators were the result of the daily routines of geniuses. The false assumption prevails that, just as I shave, Einstein, Benjamin Franklin, Leonardo da Vinci, and Steve Jobs (all coincidentally written about by Walter Isaacson) changed the world without much effort or upheaval, using their genius on Tuesdays and Thursdays right after "siesta." The lives of these geniuses were never easy. They created, made mistakes, and started over. The common trait among them is the belief that they have the power to change the world.[7]

6 Failure Does Well

In our culture, we attach failure to the individual. Yet what fails is the company, project, or marriage. Those who know how to learn from their mistakes emerge wiser. We avoid failure like the devil avoids the cross. For us, it induces fear, shame, punishment, and exclusion. However, contemporary French philosopher Charles Pépin believes that it's through the frustration caused by failure that we become human.[8] According to Pépin, a person's intelligence can be measured by their ability

[7] It's worth understanding how such innovators found the motivation, inspiration, and energy to face uncertainties and persevere in the always arduous, long, and difficult work. Many biographers take on this task for our benefit. One of them, the brilliant Walter Isaacson, in the preface to his biography of Leonardo da Vinci (Isaacson, 2017), states that he chose his subjects because he found in them the emotion, the trigger that brings out the entrepreneurial potential present in every human being. Passion, seen as an emotion at its motivational peak, is an unstoppable force. Educating in the field of entrepreneurship is pulling the trigger that brings forth this passion. Nothing is more rewarding and joyful than awakening a person's talents.

[8] Pépin, 2016, drawing inspiration from philosophers like the Stoics, who taught wisdom through acceptance, showing we shouldn't add to our mistakes the one of rejecting mistakes. He also refer-

to analyze and correct their mistakes. In this sense, making mistakes isn't just inevitable; it's necessary for understanding our desires and priorities.

Formal education believes it has a formula to prevent mistakes and strives for all students to be the same, follow the same rules, learn the same stories, and then repeat them with the same narrative. Any deviation is suppressed. In the entrepreneurial world, American culture sees failure as a stepping stone to success, while in most European countries, doors close to those who fail. It's common to blacklist those who go bankrupt.

Pépin believes the obsession with success is waning. Michael Jordan, the greatest basketball player of all time, now retired, gives talks on his failures. Swiss tennis player Wawrinka tattooed on his arm a quote from playwright Samuel Beckett: "Ever tried. Ever failed. No matter. Try again. Fail again. Fail better." We could add: "And tell the story!"

7 *Sapiens'* Power

Since the first myth was told on a stage lit by a campfire in the Paleolithic era, we haven't stopped telling stories. We hurry to narrate when we encounter something new. We repeat when there's nothing new. We invent when our supply of emotions has run dry. Stories recreate our past; entrepreneurs tell the story of the future. To inspire people to help realize their dreams, entrepreneurs describe the future that resides in their hearts with the purpose of transforming it into reality. A story about an entrepreneur's success is valuable. A story narrating their failures is worth much more.

According to Israeli historian Yuval Harari,[9] the supremacy of *Homo sapiens* over other species is due to our unique ability to cooperate in large groups flexibly and adaptively. Harari says we know how to cooperate socially because we have imagination. More precisely, because we're the only animals capable of creating and believing in fictional stories. Cooperation between millions of strangers happens when they all believe in the same story and follow the same norms and values. Religions are a good example, where people cooperate to fight in a crusade because they believe the same stories about God, heaven, and hell. Other animals, who see only the tangible, perceive the cross as an object, while many humans see eternal life in it.

Fictional stories underpin all forms of large-scale human cooperation. Democracy and human rights are fictions, just like states, nations, and companies like Google, Fiat, or McDonald's. The word "narrative," currently in vogue, highlights the importance of stories. It's used in marketing to explain, for instance, the appreciation of

ences Bachelard, who defines a genius as someone who has the courage to conduct "a psychoanalysis of their initial mistakes."

[9] Harari, 2012.

products like Havana cachaça, BMW cars, and Champagne. It also explains why Bitcoin hasn't yet dominated the market. In fact, the most successful fiction of all time is money—a piece of paper (or digital code) with no intrinsic value except in our imagination, which even its critics believe in.

We control the world because we live in a dual reality. Fictional reality is far more powerful because it defines our institutions, beliefs, and worldview. In business and politics, the best storyteller wins. Individually, each of us creates our own narrative, a fictional story to give meaning to our lives. According to American literature professor Jonathan Gottschall,[10] our origin is "Neverland," since our minds spend more time wandering imaginary worlds than the real world. Children, for instance, are irrepressible storytellers.

Given its importance for the development of our species, the ability to tell stories is even seen as having a biological rather than cultural origin. The same goes for optimism—the tendency to envision a happy ending.[11] It's the only weapon humans possess to face the certainty of death. It would have been ingrained in the human mind during evolution, at the same time we became aware of our mortality. It was nature's resource to keep our species alive. Optimism is entirely irrational because it tries to face something invincible: death.

Whether biological or cultural, optimism and the ability to create and tell stories are fundamental human traits that make up the essence of the entrepreneurial spirit present in every individual of our species. Being incurable optimists and letting their imagination soar, entrepreneurs live in the future and thus specialize in what doesn't exist. By telling stories about the future, they end up creating it. They make "Neverland" a reality.

8 An Ethical Dilemma

Yuval Harari is not alone in asserting that humans are capable of cooperation. Science shows that cooperation is the rule in the evolution of living systems. The problem is that we cooperate for both good and ill…

No one can escape the question of the ethical consequences of their own work, whether they are entrepreneurs, freelancers, or researchers. But this question takes on complex proportions for employees, especially those in large companies. There, tasks are so fragmented that the final results are sometimes not clearly visible and are difficult for employees to control. In other words, they could be contributing—unknowingly—to outcomes they might not agree with.

It's common for scientific discoveries to be used for harmful purposes against the wishes of their creators. Albert Einstein, a pacifist who didn't participate in creating the atomic bomb, was encouraged by fellow scientists to write to President

[10] Gottschall, 2013.

[11] Lopes, 2019.

Roosevelt, warning of the possibility that the Germans could build one. This letter led the U.S. to develop its own atomic bomb. Later, Einstein asked, unsuccessfully, for the U.S. government not to drop it. Santos Dumont, bitter about the military use of aircraft, romantically appealed to the League of Nations in 1926 to prevent the use of airplanes as weapons of war. The fraudulent actions behind the scandals of the companies Enron and Arthur Andersen, plotted by their leaders, threatened the reputations of people who had nothing to do with the story.

Employees can be fired for the mistakes of others, as companies follow their own values regardless of employees' subjectivity and individuality. This is an issue that must be faced by anyone who wants ethical control over the consequences of their own actions. Entrepreneurs, for better or worse, have this power.

9 Leadership and Hierarchy

Leadership is a topic frequently explored by philosophers and thinkers from various fields. All agree that leadership is influenced by circumstances and the objectives pursued. There are leaders for war and for peace. There's ongoing debate over whether leaders shape history or contingency shapes leaders. Some claim that leadership is for the few, as leaders possess specific personality traits. Leaders arise from a variety of sources: religion, laws, knowledge, money, power, and information. Some leaders are crafted by the media. There are genuine and counterfeit leaders, those constructed to manipulate. Leadership can be autocratic, democratic, or liberal; for good or evil. Some aim to serve, while others seek to dominate. With a thousand faces, origins, and types, whether deciphered or not, leaders influence the destinies of organizations and communities.

In business, leadership is a favored topic for both serious theorists and all kinds of opportunists. That's why it shocked the corporate world when Chilean biologist Humberto Maturana argued that hierarchical relationships imply a denial of the subordinate's autonomy, who ends up following the boss's lead and is prevented from being a protagonist.[12] Management guru Peter Drucker said he'd encountered leaders of all profiles: likable and unlikable, somber and cheerful, quiet and talkative. But he had never seen a charismatic leader in companies. By stating this, he sought to demystify leadership.

Entrepreneurs develop two types of leadership. In creating a company, they must be able to envision the future and convince partners, funders, customers, and suppliers to support them. In the second phase, firmly grounded in the present, they must know how to manage people to establish and launch the company. At that point, the specter of Humberto Maturana's words might loom.[13]

[12] Maturana & Varella, 2005.

[13] Drucker, 1987.

10 Narrative

We emphasize the past, even knowing or intuiting that our lives are governed by the future. Instead of a *curriculum vitae*, we should create a curriculum of the future, containing our dreams, which could potentially become our masterpieces. Executives and economists try to predict the future. Entrepreneurs don't waste time with predictions; they create the future.

Our power to shape the future stems from the realization that it doesn't exist. But what about the past, which also doesn't exist—can we change it? Logic tells us no. However, it doesn't stop historians from systematically altering our perception of the past, just as it didn't prevent Darwin from giving us new ancestors or Copernicus from setting the Earth spinning around the sun. In fact, we build our life philosophy and set our goals not through logic but through a story with a beginning, middle, and end that we tell ourselves, which psychologists call a narrative.

As Danish philosopher Kierkegaard said,[14] "Life can only be understood backwards, but it must be lived forwards." In the story of our lives, though, the past is not a fixed element, since the narrative's function is to connect the past and present—the only time we can act to reach the desired future. Thus, the narrative, an explanation we create for our own lives, is the thread connecting the past and the future, two nonexistent moments, to the present, which we suppose we know. No matter how much it displeases rationalists, we use emotion rather than logic to try to explain our existence, even if only imperfectly.

Those who understand the importance of entrepreneurial culture for a country's development in all fields, from arts to AI, may be surprised to realize that, in Brazil, society holds a strong aversion to people who undertake such work. Influenced by the culture of employment, people fail to see that they've learned to view employment as if it's the only synonym for work they have access to. They embrace employment, even knowing that this type of work relationship won't lead to self-fulfillment and happiness, because it doesn't realize their own dreams but the employer's.

11 Rewriting the Past

We've developed the false belief that Brazilians don't have an entrepreneurial past. In fact, our historians, with Caio Prado Jr. leading the way,[15] have recorded that during the colonial era, the economy relied on the trio of large estates, slavery, and exports. In this extractive system, there was supposedly no room for entrepreneurship. This irrefutable assertion gave us a past devoid of entrepreneurship, turning us into heirs of a government that sought to extract, not to build. Thus, we illustrate our

[14] Diário, 1834–1855.

[15] Prado Jr, 2013.

origins with the myth of Macunaíma, the hero from Mário de Andrade's modernist novel, portrayed as lazy, stability-seeking, and unable to use his immense creativity for economic production.

Since the past doesn't exist, it can be reinvented. This is precisely what historian Jorge Caldeira does in his book *A History of Brazil with Entrepreneurs*.[16] He dismantles the portrait of history painted in dependent hues. His research indicates that Brazilian entrepreneurs—free men operating in the dark corners of the official economy, far removed from the slavery-estate-export axis—enabled Brazil's colonial GDP in 1800 to exceed Portugal's and match that of the United States. In other words, the entrepreneur, the very figure we so desperately need, has always been among us.

This age-old novelty fills us with hope, particularly because in Minas Gerais, where we live, entrepreneurial activity was vibrant. Combined with the fact that some of our ancestors were Portuguese navigators who combined daring exploration with the world's most advanced technology, it's reasonable to assume that the Brazilian DNA contains traces of a strong entrepreneurial spirit. So, does that change anything? Yes. New generations now have ancestors who managed to create wealth through their own efforts without government protection. This new perspective could save the government and civil society from hemorrhaging due to corruption and a ravenous appetite for taxes.

12 Employment and Entrepreneurship

These are two distinct cultures: employment and entrepreneurship, each with different purposes and objectives. While employment offers itself more as a system for acquiring money to attain happiness and self-fulfillment outside of work, entrepreneurship itself is a proposal for building happiness through formulating and pursuing an existential purpose.

Despite their vastly different approaches to work, both share a common ingredient in their makeup. The choice to be an entrepreneur or an employee is influenced by mental models,[17] which are cultural attributes. Thus, both entrepreneurship and

[16] Caldeira, 2009.

[17] This expression originates in philosophy, stemming from the concept of "worldview" or *Weltanschauung*, which Louis-Jacques Filion integrated into entrepreneurial thinking. It signifies a sort of lens through which individuals see, interpret, and react to reality. Through their mental model, a person tries to explain to herself and others how the real world works. It is closely linked to culture because we tend to gather physically and virtually with people who share a similar mental model to ours. When someone says "so-and-so has an entrepreneurial mental model," it means that person is using a resource present in all *Homo sapiens*, but that few employ. A person's mental model is shaped by her experiences and influences. For instance, cultures with a higher tolerance for uncertainty are more open to risk. In entrepreneurship, the mental model serves as a foundation. Entrepreneurial capability emerges when an entrepreneurial mental model—a sort of meme—is

employment are forms of action propagated by culture. They don't rely on traditional teaching methods like classes, books, or lectures.

In fact, there aren't any courses that teach or prepare individuals to be employees or how to behave in authoritarian work relationships present in nearly all companies (we may demand democracy in the streets, but in the workplace, we accept dictatorship). Similarly, one cannot be taught to be an entrepreneur through a traditional master-apprentice approach. Both employment and entrepreneurship are cultural phenomena, spread through personal experiences, stories, and case studies.

Classes about employment typically involve transferring professional knowledge, such as in engineering, accounting, or law. There aren't any classes that address the importance of having a job, its meaning, what it offers, or the limitations it imposes on the employee's life. Similarly, the entrepreneurial potential inherent in all *Homo sapiens* is transferred in the home, not through lessons but through stories of entrepreneurs, especially those that focus on their personal lives and existential purpose. In these stories, emotions prevail.

Within the intimate conversations of families, employment is promoted as the normal path for a citizen. Having a formal job is more than just remunerative work; it's a reference point, a first-class badge, and an indicator of one's status as a citizen. Mothers carry the banner of the employment culture that reads: "Study and find a good job, my child."

Ultimately, the choice between employment and entrepreneurship spreads through social contagion. Classes, essays, theses, and research are highly successful tools in the sciences, but they don't produce tangible results in entrepreneurial education. Stories, however, are the medium for spreading entrepreneurial content. On the entrepreneurial culture's banner, which is held by mothers (rarely in Brazil), it says: "My child, be an entrepreneur and author of your own life." While the entrepreneur is the author of their own life, the employee is merely an actor.

13 The Hope of the Brazilian

Despite hating airplanes, I have flown about a million kilometers on the wings of entrepreneurship, both within and outside the country. My Brazil was small. Knowing all the capitals was not the most fascinating part. Big cities amplify virtues in infinitely smaller intensity than vices and woes. That's why they are equal. It's the small towns like Ipiau in Bahia, Mallet in Paraná, Três Passos in Rio Grande do Sul, that show our diversity. I matured by traversing great distances, measured not only in kilometers but in education, health, and access to information. Different skin tones, world views, diverse shades of income concentration, power, and knowledge. But behind the differences, it's possible to glimpse something common to all: the

dominant within a particular community. In Brazil, most young people express a desire to become entrepreneurs but end up seeking employment due to the severe barriers imposed by the government.

Brazilian spirit that turns the weight of life into a proud and gentle smile and into a mischievous look that says: "I was lucky to be born here." I don't know the source of that look, but I know that our wealth lies in it.

In small towns, most of the stories I've kept have the color of hope. There, people have faces and names, outsiders are greeted without fear with a melodious "Good morning." There, the mundane soap opera, whose characters are the residents themselves, is reinvented with different doses of salt and sugar, suspense, and intrigue, aiming to hypnotize the listener. The review of life is woven in conversations on the porch or on the park bench. In big cities where you don't talk to your neighbor and every stranger is a threat, people try to discover their own stories in TV soap operas…

14 Culture and Economy

Culture is the set of traditions, beliefs, and customs that differentiate one social group from another. People become entrepreneurs when the culture they belong to positively values entrepreneurship. This has a profound impact on education. While academic subjects can be taught through classes, entrepreneurship is disseminated through social contagion. Cultural changes are slower than those caused by teaching. In Brazil, the conception that Brazilian youth have of work is undergoing transformation.

Three decades ago, the word entrepreneurship did not exist in dictionaries. The synonym for work was employment. Today, there is a growing number of young people who prefer to undertake entrepreneurial ventures, despite unfavorable conditions.

Another way to understand the influence of culture on entrepreneurial activity is through comparing what failure represents for Brazilians and for Americans. While Brazilians generally believe that wealth is associated with birth and corruption, among Americans, it's difficult to accept an entrepreneur who has achieved success without having made mistakes along the way. Their culture tells them that success is the result of hard work, uncertainties, and failures. In 2009, FailCon was created in San Francisco, California, a kind of failure congress where entrepreneurs take the stage to narrate their setbacks. It's said there that failure is the secret sauce of Silicon Valley. Participants learn that the faster their company fails, the closer they are to success. And above all: that in entrepreneurship, it's the business that fails, not the entrepreneur.

These seemingly small cultural differences create an immense distance between the economies of the two countries. Especially because the ability to innovate is a value, a culture. To innovate, it's not enough to have a PhD title—one must possess the appropriate mental model. Nobel Prize winner Edmund Phelps reminds us that people involved in science, engineering, mathematics, and computing are responsible for most innovations.[18] But he warns that individuals who are not in these areas

[18] Phelps, 2023.

also have the ability to innovate. According to him, young people should know the human history of exploration and innovation and value the great names of the Renaissance, the expressiveness of the romantics, and the rejection of norms by the modernists.

It's necessary to revive in society the culture of experimentation that led to innovation exploding in countries like England, Germany, the United States, and France in the nineteenth century. At that time, all layers of society innovated, not just the elites. People who were obsessed with their work even without special education created tools and contributed to small and large innovations. The joy of creating, of undertaking, and taking risks was seen as a path to a fulfilling life. Phelps recommends that education stimulate adventure, experimentation, and a healthy dose of risk. Long-term growth will only be guaranteed if there is clarity on the fact that a country's prosperity depends on innovation and entrepreneurship.

15 The Muse of Entrepreneurs

Innovation is the keyword of entrepreneurship. Feared by complacent adults, it generally provokes contrary reactions in the external environment of bureaucratized structures. On the other hand, innovation fascinates young people and dreamers who have no citadels to defend or changes to fear; on the contrary, they want to transform the world.

Innovation is the muse of entrepreneurs, the target of technology, and the engine of the economy. It is the identity of the human species, capable of employing its creativity to solve problems and conceive the future. The use of fire in food preparation changed the constitution of the human brain. Functioning as a first digestion, cooking saved energy that was used to increase the size and capacity of the brain. The curves of history are traced by grand innovations such as the printing press, airplane, telephone, computer, and Internet. Innovations in the energy sector determine major economic cycles. Raw material for music, theater, painting, literature, and innovation is present in all human activities. Democracy, an innovation in permanent evolution, changed the relationships between people.

In the economy, innovation became a buzzword only after, in the last century, the Austrian economist Joseph Schumpeter described it as the cause of "creative destruction", the movement that, according to him, governs economies.[19] It's easy to understand the logic of creative destruction: the automobile replaced the horse-drawn carriage, the ballpoint pen retired the fountain pen, the Internet is altering everyone's life in all its aspects. The new, by destroying the old, invigorates the economy. When a product emerges, the market moves to a higher level, whether in terms of quality, price, or another element. All companies in the sector are faced with two alternatives: follow innovation or disappear.

[19] Schumpeter, 2017.

16 A Revolutionary Cup

Among the innovations that changed the world, there is one that, perhaps more than any other, inspires waves of entrepreneurship. Caffeine, found in coffee and other plants like mate, tea, cocoa, and guaraná, is a natural pesticide produced by plants to eliminate insect predators. Coffee originated in Yemen in the fifteenth century and was soon brought to Europe, where it began to occupy a space previously dominated by alcoholic beverages. Until then, the safest and cheapest way to ensure water safety was through fermentation. Alcoholic drinks were thus consumed throughout the day, starting from the first meal in the morning. But coffee began to replace alcohol, a depressant. And those who drank coffee instead of alcohol started their day alert and stimulated rather than relaxed and slightly intoxicated, which impacted their work performance.

Western Europe then emerged from an alcoholic prison that had lasted for centuries. Coffeehouses quickly became important social hubs, places where patrons debated politics and philosophy. Adam Smith wrote part of *The Wealth of Nations* in coffeehouses. According to historian Mark Pendergrast, both the French and American Revolutions were planned in coffeehouses.[20] After the Boston Tea Party in 1773, most Americans switched from tea to coffee. Thomas Jefferson said that coffee was the favorite drink of the civilized world. Free from alcohol, minds exploded with new ideas, giving rise to the Enlightenment and the Industrial Revolution. Researcher Chelsea Follett claims that alcohol started civilization, but it was caffeine that helped us achieve prosperity.[21]

17 Scientists and Inventors—And Artists

What do entrepreneurs, scientists, and inventors have in common? They all intervene in the world and create the future. The work of scientists and inventors has the power to change human history, but its practical application isn't always immediate. For scientific knowledge or inventions to turn into innovations that benefit society, they require entrepreneurial action—whether by a profitable company, a social venture, or public institutions. Of course, this path does not always prevail. The reverse is not uncommon: universities inspire companies that, in turn, generate knowledge.

Let's not forget that those who create riches like theater, music, painting, poetry, peace, freedom, and social harmony are also entrepreneurs. In some cases, their work cannot be monetized, but it has unparalleled value because it nourishes the spirit and lifts our corporeal selves beyond mediocrity. In some cases, the results of their work may not be monetizable, but they have immeasurable value because they nourish the spirit that lifts the physical mass out of its mediocre destiny. One of the

[20] Pendergrast, 1993.

[21] Follet, 2023.

challenges for entrepreneurs is precisely to shorten and enhance the metamorphosis of knowledge into material or immaterial wealth. Entrepreneurial education aims for both roles, that of acquiring knowledge and transforming it into wealth, to be performed by a single actor—the student.

The business world's demands prompt quick responses from the educational system. More specializations have emerged in the last four decades than in all of history. Likewise, skills that the market rarely needs are removed from school curricula. Eccentrics who want to earn a living as dancers, musicians, singers, writers, actors, or entrepreneurs must often develop their talents mostly outside conventional education.

Unfortunately, the arts are not a priority topic in basic education, which is the time when talents are revealed. Very few parents will complain if their children don't have theater or music at school. Families are disappointed when their children make spelling and grammar mistakes but aren't concerned if they're unable to combine words with the necessary skill to convey their ideas, emotions, knowledge, and worldview. Even so, without us knowing how they emerge, novelists and poets continue to enrich our lives.

Entrepreneurship education only began in the last four decades and is still rare in Brazilian schools. Yet entrepreneurial knowledge has not ceased to be produced and disseminated for the past 10,000 years. We are discovering that the capacity to innovate, the entrepreneur's task, has close ties to the arts, where breaking patterns and creating beauty is routine. In fact, creativity, innovation, and the arts are fruits from the same orchard and form the amino acids of entrepreneurship. The business world's demands on the education system will change. Curricula from kindergarten through college will open up to creativity and the arts, investing in helping students discover their talents. On that day, passion—the mother of creativity and entrepreneurship—will leave its clandestine hiding place and openly claim its spot in the world of employment and in classrooms.

18 Entrepreneurship: A Philosophy?

What do entrepreneurs and philosophers have in common? At first glance, nothing. Today, we conceive of the philosopher as an intellectual, mostly academic, who spends her life weaving theories to justify one perspective or another about science, politics, or religion. But it wasn't always like this. According to historian Pierre Hadot, originally in ancient Greece, philosophy "did not consist of teaching abstract theory, much less exegesis of texts, but in an art of living, a concrete attitude, a distinctive lifestyle that engages one's entire existence."[22] In this sense, entrepreneurship is a philosophy.

[22] Hadot, 2001, p. 154. According to Hadot, this change in the concept of philosophy became effective in the Middle Ages. With the rise of scholastic university, philosophy was reduced to a mere *ancilla* of theology, a conceptual servant. Although theology lost its dominance in modern times,

From the end of the fifth century B.C., anyone entering Athens would find, in addition to markets, courts, and temples, a series of institutions dedicated to teaching happiness. These were the philosophical schools, including the Academy of the Platonists, the Lyceum of the Aristotelians, the Garden of the Epicureans, the Porch of the Stoics, and even the public square of the Cynics—philosophers who were named this because they lived on the street unashamedly like dogs (in Greek genitive, *kynos*).

All schools agreed that humans find themselves in a state of ignorance, fragmentation, and suffering, a state from philosophy, through physical, emotional, and mental exercises, can liberate. Philosophy was seen as a way to integrate different dimensions of the human being into an organic whole. However, the way philosophers represented this goal and the means they used to achieve it varied. Plato's disciples practiced gymnastics, learned music, studied mathematics, meditated on dreams, and engaged in politics, cultivating an aspiration for virtuous and valuable deeds that conferred immortality. Meanwhile, Epicurus' followers isolated themselves in a monastic-like community, adhering to a strict diet: satisfying hunger and thirst in the simplest possible way, having good conversations, contemplating the universe, and enjoying the sheer joy of being alive—since there would be nothing after death.

If we could return to ancient Greece and establish a school of entrepreneurship, it would be seen as a philosophical school. What would be taught there, essentially, would not be theories about this or that, but a way to achieve happiness: seeking to transform innovative dreams into reality, generating personal benefit and positive value for society. In entrepreneurial philosophy, the secret to a fulfilled and liberated life is precisely this pursuit, which involves both reason and emotion.

Another point that entrepreneurial education shares with philosophical education is the importance of stories. Ancient philosophical texts are full of myths and biographies. If there is one thing that sums up all of Plato's philosophy, it's the famous "Allegory of the Cave." Furthermore, the most important book published in antiquity on the history of philosophy, in fact the only one that has reached us, is called *Lives of Eminent Philosophers*, by Diogenes Laërtius. In all philosophical schools, meditating on the life of the wise was a crucial part of the curriculum. When asked what he thought about justice, Socrates replied: "I don't show it with words but with actions." And Polemon, one of the leaders of the Platonic Academy, used to say, "We must practice with concrete facts of life, and not with dialectical speculations that make us like people who memorize a music manual but have never practiced."[23]

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most authors maintained the medieval attitude, sometimes replacing theology with politics or science. Hegel, for instante, in the preface to *Phenomenology of Spirit*, is explicit in this respect when he states his grand intention: "To collaborate so that philosophy approaches the form of Science, the objective where it stops calling itself 'love of knowledge' and becomes effective knowledge—this is my goal." Thus, philosophy loses its lived, concrete aspect; it loses *philia* (love) to become only *logos* (reason). No a way of living, concerning the person in her entirety, but abstraction and instrumental theory.

[23] Diógenes Laércio, 2014, p. 115.

19 Know Thyself

We are captives to certain questions. One of these, which haunts us from our first school exam to our first job interview, is "What do you know?" This question stems from the era when reason was believed to be the only path to knowledge. Therefore, it dismisses answers tinged with emotions or subjectivity, valuing only what is rational. Social advancement depends on the knowledge one appears to possess. In this era, the individual, dependent on others, asks, "Where am I going?" Baby boomers and Generation X are the last representatives of this familiar era.

Aims directly at a person's inner being, their way of existing. It doesn't control the response, impose limits, or seek the exact or perfect. There is no way to consult masters, books, or research to answer it. The response has never been written down, as it expresses emotions and individual characteristics. It doesn't reveal itself through teaching but through self-learning. Knowing primarily comes to mean knowing oneself.

The question "Who are you?" turns the individual into the protagonist and serves as a bridge to the next question: "What is your dream?", which gives the person authorship of their own story. Individual talent, previously forgotten, becomes the most valuable skill, the greatest capital. Instead of the passivity in the question "Where am I going?", the young members of Generation Y desire the freedom to ask themselves: "Where do I want to go?" This is the question of the entrepreneur.

20 The Human Voice

Despite increasingly connecting through keyboards and screams, we remain largely shaped by our oral traditions. Using only their voices, leaving not a single word in writing, Christ and Socrates changed the world. And misusing words can be very destructive. Words have unmatched power to deceive, as employed by marketers and those lacking character. Too often, we speak carelessly to those we love, reserving our best tone for strangers. In our daily lives, we blunder when our words fall out of tune.

In his book *Sound Business*,[24] English expert Julian Treasure suggests that speaking well is crucial for success in all aspects of life and offers some practical advice. We should never speak ill of others or make judgments. The greeting "Hello, how are you?" demands the response "Well, thanks!" not a torrent of complaints and grievances. It's an unforgivable sin to blame others for one's own failures, lie under any circumstance, act as the keeper of truth, or confuse facts with opinions…

The list is endless, but the hardest to endure are those who speak endlessly and thoughtlessly. The greatest respect we can offer listeners is to process and refine our words from mind to mouth, so they are concise, humorous, elegant, and succinct. A

[24] Treasure, 2011.

character in a work by Goiás author José J. Veiga says, "Everyone's speech should be given in meters at birth. As soon as someone speaks carelessly, they waste some of that length. One fine day, they open their mouth, and only wind comes out."

My contribution is to remind you that words exist only to enhance silence. Asking more than answering shows wisdom while also bolstering your interlocutor's ego.

21 To Conclude: Our Vocation

The entrepreneurial capacity is present in every individual. It is simple and does not require grand theories. However, academia was slow to recognize its existence and quickly sought to complicate it. Today, it feels like one needs a Ph.D. just to start a small business. We tend to overcomplicate things, as if simplicity were a deficiency and complexity a virtue.

Entrepreneurship is, above all, the ability to articulate resources. A software company owner doesn't need to know how to program. She just needs someone on her team who does.

The act of entrepreneurship is preceded by two moments: the emotion sparked by a dream and the identification of a problem to be solved. Entrepreneurs exist because problems exist. The references entrepreneurs rely on are ever-changing, because everything is in constant motion.

Therefore, there are no ready-made recipes, foolproof answers, or miraculous tips for entrepreneurs. There's only the story of one's life. Following paths already trodden by others is a misstep that could lead to failure. For entrepreneurs, the maps available are simply tools to minimize risks and learn from mistakes. It's not much, but it's the best possible in a field defined by uncertainty…

Dreams, as the stories suggest, are treasures at the end of the rainbow. They truly exist, but only for those who understand that the real magic happens in the pursuit, not the destination. The pursuit, to borrow Fernando Pessoa's verse, is "the divine processes that makes the road exist." When we assume the freedom to follow our dreams, letting ourselves be driven by our innermost passion, then, and only then, we're realized as humans beings.

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Corporate Education as a Way of Developing Intrapreneurship in Public Organizations: An Analysis Based on the Case of Universidade Estadual de Santa Cruz (UESC)

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Abstract This study is based on the understanding that Corporate Education in public organizations contributes to the development of intrapreneurial skills and competencies in employees and, consequently, reflects on the modernization and development of the activities carried out, with the general objective of understanding how Corporate Education at the State University of Santa Cruz (UESC) contributes to the development of intrapreneurial skills and competencies in employees and, consequently, reflects on the modernization and development of the activities carried out. This is research that used a qualitative approach and case study strategy. The data collection techniques used were the application of online questionnaires developed in Google Docs, document analysis, collection of statements, and observations in three continuing training courses, in addition to holding an internal online seminar. The data were analyzed through content analysis and allow us to affirm that the CE carried out at UESC, through the continued training of university analysts, not only contributes to the development of intrapreneurial characteristics in the personal and professional aspects but also meets the demands of public management and modernization of the university.

Keywords Intrapreneurship · Cooperative education · Public organization

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J. Jardim (ed.), *Entrepreneurial Education in a Global and Digital World*, Studies on Entrepreneurship, Structural Change and Industrial Dynamics,
https://doi.org/10.1007/978-3-032-17008-8_15

1 Introduction

Corporate Education (CE or EC), from the 1980s onwards, began to gain prominence in Brazilian organizations and is an important strategic instrument for improvement, innovation, efficiency, and organizational effectiveness through the development of skills and competencies of its employees. In the context of the Brazilian public sector, in turn, investment in personnel development has its initial milestone at the federal level, through the Administrative Department of the Public Service (Dasp).

Dasp can be considered as the first body to be concerned with the qualification of public service with a view to improving the structure and efficiency in the provision of public services (Novaes, 2021). The actions of this body were based on the principles of impersonality, meritocracy, and Weberian bureaucracy as adopted in industrial management.

In 1986, Dasp was replaced by the Public Servant Training Center Foundation (Funcep), which was created with the aim of promoting, developing and executing education, training, improvement and professionalization programs, social and recreational well-being of public servants (Law n. 6.871 of December, 1980), however, 4 years later, Funcep became the National School of Public Administration (Enap).

According to Silva (2017), Enap's focus was on the modernization and quality of public services to meet the needs of Brazilian society, which were becoming increasingly complex and diverse due to the context of redemocratization that took over the country. And, precisely, following the expansion of Enap, the CE, in the public sector, began to be conceived as a strategic instrument that enables greater effectiveness and efficiency in public management, in addition to providing greater transparency to the processes developed by Brazilian public bodies.

In the case of the state of Bahia, the CE is gaining more and more effectiveness among its bodies through Direct and Indirect Administration, offering a systemic organizational structure that encompasses other bodies, such as: the Public Service Corporate University (UCS), the Board of Directors Development and Valorization of People (DDE), the Internal Instruction Program, and the Corporate Education Committee (CEC).

CE is a training reality in public universities in Bahia and occurs with the support of other government bodies such as the People Development Board (DDE), the Bahia Administration Secretariat (Saeb) and the Public Service Corporate University (UCS). The UCS was created based on Decree n. 9.631, of October 31, 2005, with the purpose of developing and executing pedagogical strategies, aiming at pedagogical and methodological monitoring of continued training and taking educational actions to the entire staff, placing the server as the protagonist of their learning (Ramos, 2013).

CE, in the Bahian public service, marks a new era in continued training for employees, in addition to installing a mentality of the importance of education to improve routines in government bodies, valuing the intellectual capital of those involved and, consequently, with recognition of their potential, both as apprentices and in the role of internal instructors, unlike the period when Training and

Development (T&D) was taught, when courses were taught by outsourced companies, without continuity of training.

The implementation of CE, in the state public sphere, means a new way of perceiving and designing continuing education programs that take into account the potential of employees, going beyond cognitive aspects, working on feelings of organizational belonging, with the implementation of a culture of permanent learning, aiming at autonomy and that the server is also responsible for their own training and dissemination of the information obtained from the training, creating an education network that encourages cooperation between those involved, based on the University's guidelines and its conditions offered to employees.

> People, at all hierarchical levels, are increasingly required to adopt an attitude focused on self-development and continuous learning. To create this profile, companies will need to implement educational systems that prioritize the development of attitudes, postures, and skills, and not just the acquisition of technical and instrumental knowledge (Eboli, 2010, p. 37).

In this sense, the CE can bring innovative perspectives when it proposes to offer different activities with multiple contents, crossing the limits of traditional educational practices, providing literacy opportunities, supplementary and preparatory courses for the Enem, quality of life activities, health and safety, management, public speaking, legislation, writing, financial education, psychic guide, fire brigade, first aid, inclusion courses, among others, with long or short course loads, face-to-face or distance learning, but all of a theoretical-practical nature.

Therefore, the reality of continued training in the Bahian public sphere, under the assumptions of an education that forms rather than simply trains, guarantees its employees access and permanence to continuing training programs through short and long-term courses, and it also encourages the continuity of their academic studies, through institutional places for specialization, master's and doctorate courses. This continues even with a fiscal and financial crisis that imposes contingencies and cuts to university budgets and, mainly, affects investments in CE.

Taking this context into account, this research had its starting point on the assumption that CE, in public organizations, contributes to the development of intrapreneurial skills and competencies in employees and, consequently, reflects on the modernization and development of the activities carried out. Thus, the general objective of this research is to understand how CE at UESC contributes to the development of intrapreneurial skills and competencies in employees and, therefore, reflects on the modernization and development of the activities carried out.

2 CE as an Essential Strategic Tool for Developing Skills and Competencies in Public Organizations

CE is an essential strategic practice for developing skills and competencies in organizations of any type, whether private, public, or third sector. According to Eboli (2010, p. 29), this practice can be defined as a "means of aligning organizational

strategies with employee skills, essential for business sustainability". Thus, it is possible to infer that this can be considered a two-way street as it is strategically used to integrate the personal development needs of employees with organizational objectives.

Meister (1998), in turn, argues that CE programs are fundamental for continuous innovation and competitive advantage. In addition to highlighting that these programs, organizations can better prepare employees with the necessary skills to respond and face challenges related to changing market dynamics and technological demands. On the other hand, Ulrich (1998) considers that these programs allow organizations to respond not only to changes that occur in the market but also to anticipate them, creating a proactive and visionary workforce.

In this way, it is clear that CE allows the creation of a continuous learning environment, where the development of competence goes beyond technical training. Fleury and Fleury (2004, p. 34) state that "competence is not just knowing how to do, but also learning to learn, adapting and responding creatively to new situations", that is, it encourages not only acquisition of technical knowledge but also the development of social and cognitive skills.

Historically, CE emerged as a strategic response to the old traditional training and development (T&D) model applied in organizations that focused only on technical training. According to Eboli (2010), CE is directly related to a people development system based on the management of people based on skills. The first Corporate University (UC) emerged shortly after the Second World War, in the United States, when General Electric of Crotoville, New Jersey, founded the General Motors Institute, "with the aim of offering degrees in Engineering to its executives, emerging as a reference in EC, even limiting access to directors and employees of class A" (Tarapanoff, 2004, p. 17).

In Brazil, on the other side, the first were implemented in the 1990s, through multinational companies with the initial purpose of complementing the academic training of professionals, promoting education in various aspects and with the different idea of T&D programs. In this sense, Esteves and Meiriño (2015) add that UC aims to stimulate a vision of continuous learning, set goals for the organization, and add business value through aspects aimed at a new way for employees to think and work.

Considering that CE goes beyond the simple delivery of a traditional training program, researchers from around the world agree that this education is central to the development of an environment where continuous learning is valued and promoted, contributing significantly to long-term organizational agility and success term. Combining technical training with broader skills development forms the basis for a versatile and adaptable workforce capable of contributing to the organization's continued innovation and growth.

While the T&D model aimed only to train employees to perform tasks, in a timely manner, without causing changes in the behaviors of those involved. CE, through UCs, goes further when it prioritizes the development of people so that this education produces knowledge that goes beyond organizational aspects, reflecting, in the public context, positively on the care and services provided to society.

According to Meister (2005), the main difference between T&D and CE is related to the purpose of each one. While CE develops strategic activities aimed at learning throughout the organization in a permanent, continuous way and with investment in new technologies, T&D maintains the focus on the development of the individual, and therefore, the training is aimed at the internal public, through external consultancies for your training.

The implementation of UCs in the organizational environment contributes to important aspects in the management of intellectual capital, as it introduces, through its principles and foundations, a modern way of promoting education. This change was defined by Meister (2005, p. 29) as "a strategic umbrella to develop and educate employees, customers, suppliers and the community, in order to fulfill the organization's business strategies".

In this way, many companies that used T&D as an organizational strategy began to feel challenged by globalization and constant technological changes and began to rethink their strategies, their training, and their people management. It became necessary to reformulate the training of employees at all levels, from top management to the production line, with a focus on more significant methodological learning processes that awaken the individual, so that they were reflected in their self-education (actively contributing to resolutions problems), being able to develop necessary skills and business competitiveness.

The CE's proposal is more complete, with a continuity of activities aimed at the integrality of the human being, reflecting changes in those involved. For Banov (2013), CE can be considered as a training and improvement proposal created as a result of the speed of changes, different from traditional education that trains people for the general market. In this sense, Esteves and Meiriño (2015) corroborate this by arguing that CE has the idea of stimulating a vision of continuous learning, setting goals for the organization, and adding business value through aspects aimed at a new way of thinking and working.

The CE presents seven principles that contribute to a new worldview that seeks to overcome common sense: the first principle is competitiveness, in the sense of recognizing education as a strategy to develop the intellectual capital of participants; the second, perpetuity related to the perception that education is an important cultural heritage; the third is connectivity in terms of contributing to the social construction of knowledge, through internal and external relationships in the work environment (Eboli, 2014).

The fourth principle of CE is availability, in the sense of reserving resources for learning actions, regardless of space, time, and place. Citizenship is another principle and is related to the incorporation of feelings and values into training that encourages the practice of citizenship and social development. The sixth principle is partnership that understands education through a structure of assistance and sharing. And, the last principle is effectiveness, which considers education as a continuous, permanent, and strategic process (Eboli, 2014).

Although UC recognizes knowledge as a significant organizational ally to meet the demands of today's world in which changes are increasingly rapid and allow them to transform into learning organizations, there are some factors that can be

considered as limiting in the CE, such as the issue of financial investment. Banov (2013) and Eboli (2014), for example, agree that investment in the qualification and education of the workforce by organizations is still one of the biggest obstacles found in CE.

It is worth highlighting that the CE developed in private organizations presents significant differences in relation to that practiced in public organizations in Brazil. In this sense, Ramos (2009, p. 1) argues that "the State has been faced, therefore, with the pressing need to respond to this situation of complexity and dynamism, in a situation of increasingly scarce resources". Financial investment in the public sphere is quite restricted and strongly limited by the frequent expenditure contingency decrees issued by the Government.

In the public context, the focus of this research, CE practices seek cooperative ways of educating without burdening the budget in partnerships between public bodies and Internal Instruction. And, thus, ensuring that the public sector guarantees compliance with the CE's purpose in this segment, which is to offer society services with quality and care, supported by the server's learning, making them increasingly professionally prepared to adapt to changes within an academic environment, capable of providing creative solutions to new institutional demands influenced by national and international policies (Bahia, 2014).

3 Intrapreneurship and Its Possible Contributions to Innovation and Efficiency in Public Organizations

Entrepreneurship is a phenomenon defined as a process of creating something different and with value through the dedication of time and effort and through which the individual assumes corresponding financial, psychological, and social risks and receives the consequent rewards of economic and social satisfaction (Hisrich & Peters, 2004). This phenomenon is part of the agendas of researchers from different parts of the world, both in the academic context and in government sectors, since the entrepreneurial spirit of individuals is crucial for the prosperity of any country (Olszewska, 2014; Pihie et al., 2012).

The process of creating something different and with value reveals the innovative characteristic of entrepreneurship. According to Lapolli and Gomes (2017, p. 128), "this capacity for innovation comes from people and manifests itself within organizations, giving shape to the phenomenon of Intrapreneurship". This way of entrepreneurship is also known as corporate entrepreneurship, which represents the practice of cultivating an entrepreneurial mindset within an established organization.

Although Schumpeter (1985) already considered that the entrepreneur can also innovate within existing businesses, it was only in the 1970s that Gifford Pinchot III created the term intrapreneur. This term was created with the intention of characterizing workers who have entrepreneurial characteristics and behaviors, taking responsibility for creating innovations of any kind and taking risks of traditional

entrepreneurship with the support and resources of an established organization (Pinchot, 1989).

The main characteristics of intrapreneurship are autonomy in developing new projects, skills to work in an uncertain environment, and a strong motivation to innovate. Thus, it is possible to state that in any type of organization, it is possible for employees to perform intrapreneurial skills; however, it is difficult to think about intrapreneurship related to public service.

Although intrapreneurship has a strong connection with the private sector, the public sector should not be neglected. According to Zahra and Wright (2011), for entrepreneurship to influence the management practice of public policies, there needs to be a substantive change in the focus, content, and methods of research on entrepreneurship. In this context, it can be said that, in recent years, studies on public entrepreneurship have grown in response to the need to generate more innovation and quality in the provision of services to citizens (Kearney et al., 2007, 2010; Meynhardt & Diefenbach, 2012).

However, Damanpour (1991) argues that innovation in public organizations often encounters obstacles due to their bureaucratic structures and resistance to change, but the adoption of intrapreneurial practices in these organizations can overcome such challenges, encouraging their employees to develop innovative solutions that improve the provision of public services.

In the Brazilian context, Antônio Cândido (2007) argues that intrapreneurship allows public employees to be "agents of change", transforming ideas into actions that result in improvements in the public sector. Thus, the practice of intrapreneurship in public organizations can result in numerous benefits, because when employees are encouraged to take initiatives and seek innovations, employee involvement and satisfaction create a more dynamic, productive, and efficient work environment (Morris & Jones, 1991).

Intrapreneurial practices take place within organizations when the strategic level of the organization develops policies to support and recognize professionals. In this sense, Antoncic and Antoncic (2011) argue that organizations need to provide opportunities for personal growth and development for their employees, in addition to guaranteeing fair wages in exchange for their work. According to Pessoa and Oliveira (2006), intrapreneurs feel the need to be recognized not only by their superiors but also by society, as they wish to increase their status and respect in their circle of acquaintances.

Another intrapreneurial practice that organizations should encourage in their employees is that aimed at fostering creativity and innovation. Antoncic and Antoncic (2011) argue that organizations can stimulate the creativity and innovation of their employees by assigning challenging and interesting tasks. All this is because this stimulus can significantly contribute to producing transformational results in the organization.

Organizations also need to encourage intrapreneurship through practices of communication, freedom, action, and tolerance for errors. Together, these intrapreneurial practices enable employees to be aware of the effectiveness, success or failure of implementations and innovations occurring in organizations; feel inserted in a

flexible environment and open to changes in the organization's strategic guidance models Lapolli and Gomes (2017).

Considering the above, it is understood that intrapreneurship can be a promising option for renewing and improving practices in public organizations. And that the adoption of intrapreneurial practices in these organizations drives innovation and efficiency, in addition to cultivating a more motivating and engaging work environment for employees. However, it is necessary to report the difficulties for public intrapreneurship.

According to Lapolli and Gomes (2017), encouraging intrapreneurship in public organizations is a complex task and corroborates with Sadler (2000) that characteristics such as bureaucratic processes, regulation, and mass accountability, political intrusion in the management of salary policies, multiplicity, and Goal ambiguity, among many others, common to the public environment, inhibit intrapreneurship.

4 Research Method

The methodological approach chosen was qualitative, adopting, more specifically, the case study, which is appropriate for research due to its ability to explore complex phenomena within their real contexts with little researcher control over events and manifestations of the phenomenon (Martins, 2008; Yin, 1981), as it aimed to understand and treat the case of UESC in a deep and detailed manner, aiming to discover new elements, as well as to understand CE as knowledge in constant construction, taking into account the context in which the object is inserted, portraying reality completely, in addition to the use of multiple sources of information (Lüdke & André, 2017).

The case study was carried out at UESC, a public higher education institution, located in the South Coast region of Bahia, taking advantage of the diversity and richness of the continuing education and CE programs offered by the institution. The choice of UESC as the research locus was also due to the institution's experience in CE, as well as the fact that the researchers have ties to institutions, and the participants are members of the university's staff.

The research participants were 32 university analysts hired after 2011, through a public competition. The choice of this group is due to the implementation of the CE at UESC, starting in 2011.

Data collection involved the use of online questionnaires developed in Google Docs, document analysis, and collection of statements and observations in three ongoing training sessions. An internal online seminar was also held to present the collected data and discuss the results with participants and the university administration.

Data analysis was carried out using a qualitative approach that favors the understanding of participants' perceptions and experiences, following an inductive process to identify emerging themes and patterns in the data collected.

5 Presentation of Data and Results

From the data collected, it was possible to identify the professional and academic profile of the 32 university analysts who participated in the research. All are in the age group of 31–52 years old, 53% female and 46.9% male. Regarding marital status, 37.5% declared themselves single and 0.6% married. And, regarding housing, 56.3% live in Itabuna-BA and 43.8% in Ilhéus-BA.

Considering that the prerequisite for the role of analyst is a bachelor's degree, 40.6% of the participants have a lato sensu postgraduate degree, 34.4% a master's degree, and 18.8% a doctorate, while some are undergoing strict sensu training. Some of the respondents already worked at UESC before the 2011 competition as university technicians, commissioned positions, or with contracts under the Special Regime of Administrative Law.

As for professional experience at the University, only 12.5% have less than 5 years of professional experience at UESC. Regarding the capacity of these analysts, 50% are in the administrative area, 21.9% in academic sectors and 9.4% in laboratories, and 9.4% are in other sectors.

Regarding the continuing training offered at UESC, 84.4% of respondents participate in the continuing training offered, with 43.8% having frequently participated in the courses offered. On the other hand, regarding nonparticipation in continuing training, 37.8% argued that the sector's activities make their involvement with CE impossible, and 6.3% expressed a lack of interest in the actions.

When participants were asked to define UESC's continuing education in three words, the most cited were: knowledge, training, development, qualification, learning, training, modernization, opportunity, and updating. The term knowledge was the most expressed, perhaps that is why 59.4% fully recognize, and 31.3% also agree that CE is essential for their professional development.

With regard to the methodology adopted in the continued training of university analysts at UESC, it was possible to analyze through official documents that even though it was a local authority, the pedagogical proposal of the UCS was adopted. The Institution has two representatives who are part of the State Corporate Education Committee (CEC) and has a Technical Cooperation Agreement with UCS.

It was also observed that during continuing education courses, instructors seek to adapt the courses to the institution's realities, introducing technological resources that make it possible to minimize or overcome some deficiencies related to physical resources caused by the lack or precariousness of equipment, computer laboratories, and financial resources, which prevent the acquisition of new machines and investment in a specific laboratory, for the continued training of analysts.

Another point observed was that the internal instructors stimulate the interaction of participants based on the Freirean methodology, based on the dialogicity of action and reflection. The use of Active Methodologies by UESC's internal instructors was noticed in the course plans of the training sessions observed, mainly the flipped room, gamification, multiple resources, and use of ICT.

The absence of printed material was also a prominent issue in the observation carried out. From registrations, online tutorials, platform consultations, and

attendance to assessments of these continuing education courses are carried out through links on the Doity Platform.

With regard to the respondents' narratives, it was possible to identify in their statements that the participants recognize the importance of the continuing education courses offered by UESC to modernize their professional activities, as well as to improve new skills and personal competencies, such as, for example, the Internal Instruction course that prepares employees to teach courses at the government level.

The issue of CE through postgraduate courses, more specifically the master's degree and doctorate, was also highlighted in the participants' statements. UESC encourages and prepares the participation of analysts through a permanent program in the Annual Training Plan (PAC) for the selection of master's and doctoral programs, teaching everything from project preparation, foreign languages, submission of scientific articles to the promotion of meetings with the Pro-Dean of Postgraduate Studies to clarify institutional vacancies and other questions.

Despite recognizing the importance of continuing education developed through UESC's CE, university analysts also expressed some existing gaps that need to be addressed, such as the need for courses focused on specific areas, such as laboratories, technology, veterinary hospital, and university press; lack of investment in continued training in the distance learning modality, such as a master's degree in public management.

Furthermore, they pointed out the need for exclusive dedication in the case of master's and doctorate degrees, as the reduction in working hours is not sufficient, as removal from activities at UESC only happens when the employee studies at another institution or when requested to completion of the course. In addition to highlighting the need for UESC to establish a way of measuring the continued training of analysts and to develop a mapping of the competencies and skills developed in order to raise the quality of CE at the University, and also serve as a means of understanding the intellectual capital of analysts.

Regarding the degree of satisfaction regarding the CE developed by the university and the knowledge about the PAC and the Internal Instruction Program, 46.9% of the research participants are satisfied, 15.6% are fully accomplished, another 18.8% are neutral in relation to the question, 50% consider the courses offered by the institution to be of quality and 34.4% are part of the internal instructors; 53.1% indicate the desire to also become instructors; 53.1% are aware of the university's Annual Training Plan; and 81.3% are aware of the State Government's Internal Instruction Program.

In 2021, UESC had a staff of 49 internal instructors with different academic backgrounds: Law, Nursing, Biomedicine, Pedagogy, Mathematics, Administration, Economics, Literature, History, Philosophy, Agronomy, Computer Science, Computer Networks, WEB, Psychology, Library Science, Geography, Languages Applied to International Negotiations, Journalism, Occupational Security, Social Communication, Data Processing, Computer Systems.

In 2018, of the 78 courses offered to employees, 23 were carried out by the institution's internal instructors; the remainder involved partners, such as the Ilhéus and Itabuna Fire Department, the Benjamin Constant Institute, UCS, as well as other

collaborators/partners who, most of the time, are university professors with extension projects.

The data presented indicate that the CE developed at UESC reflects positively on the quality of the service provided, considering that analysts who develop intrapreneurial skills and abilities are available to the institution and can offer support and propose more grounded technical solutions to everyday problems that arise. The university deals with within the scope of administrative work.

6 Final Considerations

This research was based on the assumption that CE in public organizations contributes to the development of intrapreneurial skills and competencies in employees and, consequently, reflects on the modernization and development of the activities carried out. The general objective is to understand how CE at UESC contributes to the development of intrapreneurial skills and competencies in employees and, therefore, reflects on the modernization and development of the activities carried out.

The methodological decisions were appropriate to achieve the objective, allowing the information contained in the documents to be analyzed, analysts to express what they think and feel about CE at UESC, and reflect on how CE in public organizations contributes to the development of skills and intrapreneurial skills in employees, and consequently, reflected in the modernization and development of the activities carried out.

When analyzing the CE at UESC, it was possible to identify the existence of an organizational structure aimed at the continued training of the administrative staff through the Human Resources Development Coordination (CDRH), which is responsible for preparing the Annual Training Plan with the participation of servers, runs courses and manages the university's internal instructors, seeking partners and collaborators to strengthen the collaborative learning network, all of this is part of the institution's internal CE policy.

Another relevant point that was possible to verify is that although CE contributes positively to the development of skills and intra-entrepreneurial competencies in employees and, consequently, reflects on the modernization and development of the activities carried out, there are budgetary limitations both at the level of short-term courses and of masters and doctorates that could compromise CE activities at the University.

Regarding this aspect, analysts pointed out that the constant expense contingency decrees issued by the State Government have harmed the CE developed at the university, since even though it is an autarchy, the Institution It is even impossible to renew the equipment in the training room and computer laboratories used in continuing education, send employees to courses or events outside the city/state or hire consulting companies to serve specific areas of activity, such as technology, laboratory, publishing house, veterinary hospital, and library.

In relation to the perception of the importance of continued training for their professional development, and its contribution to the performance of routines, analysts realize that studies, through master's and doctorate degrees, are also opportunities for knowledge and personal growth, in addition to being a requirement for career progression. They also recognize that UESC guarantees continued training by offering and encouraging employee participation in courses in postgraduate programs (specialization, master's, and doctorate). However, they point to a demand for the creation of strictu sensu course programs in the distance learning modality.

They also point out the need to review Consu Resolution n. 01 of, 2007 with a view to adapting it to the reality of the institution's technical staff in relation to exclusive dedication to studying master's and doctorate degrees, as the current one only provides for the reduction of working hours and time off work, end of the course, as well as the need for greater direct involvement of the Rectory and immediate managers in the continued training of employees, becoming one of the management priorities, especially in relation to the release of employees to participate in the courses.

From this analysis, we concluded, as assumed, that CE, in public organizations, contributes to the development of skills and intrapreneurial competencies in employees and, consequently, reflects on the modernization and development of the activities carried out. The CE carried out at UESC, through the continued training of university analysts, not only contributed to the development of intrapreneurial characteristics in personal and professional aspects but also meets the demands of public management and modernization of the university.

In the construction of this research, the main limitation identified was its construction based only on data available in the master's research of one of the article's authors. However, this limitation can be seen as an opportunity for further studies to update, expand, and compare with other positions/functions, time, and other institutions with different research methodologies and new discussions developed and deepened both in public organizations in Bahia and in other states and countries, even to contribute to the development of public policies that improve existing CE.

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Didactic Strategies for Teaching Foreign Languages in Distance Vocational Training: A Global Entrepreneurship Perspective

Paula Valente and Daniela Melaré Vieira Barros

Abstract Global entrepreneurship is present in all professional training, through the development of essential skills, including linguistic abilities. Furthermore, we acknowledge the importance of distance education not only as a means to facilitate access but also as a setting for the development of additional competencies for the workplace. This study is grounded on these premises and poses the following research question: What didactic aspects are crucial in developing a model for teaching foreign languages in distance vocational training (MDFP@)? The aim was to identify elements and pedagogical strategies that effectively contribute to the success of trainees in digital learning environments. Employing a mixed-methods research approach and using data triangulation, this study thoroughly examines the outcomes of the conducted experiments. This chapter focuses on a segment of the investigation that directly pertains to the foundational pedagogical strategies structured within the MDFP@ model. The strategies underscored herein demonstrate the efficacy of an integrated and adaptive approach, tailored to meet the cultural and individual nuances of the trainees, thereby enhancing digital resource utilization for more effective and inclusive learning outcomes.

Keywords Vocational training · Didactic strategies · Distance vocational training · Didactic model in foreign language teaching

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J. Jardim (ed.), *Entrepreneurial Education in a Global and Digital World*, Studies on Entrepreneurship, Structural Change and Industrial Dynamics,
https://doi.org/10.1007/978-3-032-17008-8_16

1 Introduction

Digital transformation acts as a critical catalyst for social, economic, and cultural shifts globally. Amidst the rise of the Knowledge Society, emphasizing information and technology's vital role in governance and education, our planet has evolved into a "global village," where digital technologies are essential for swiftly disseminating information. This acceleration demands continual updates, thereby transforming training encounters into ongoing processes. In today's world, there is a critical need to (re)imagine vocational training. Adopting distance vocational training is crucial to equip trainees with essential, multidimensional skills across disciplines, enabling them to adapt to complex and uncertain environments, as described by Figueiredo (2019).

In the current economic, political, and social climate, where power increasingly resides with those possessing advanced skills, investing in the development of these skills is crucial for driving growth and competitiveness. Skills determine Europe's ability to boost its productivity. However, European education and training systems continue to fall short of providing the skills demanded by the labor market and fail to collaborate effectively with the business sector to align the learning experience with labor realities, as emphasized by the International Labor Organization (2019).

Distance vocational training, as implemented by the Employment and Vocational Training Institute of Portugal (IEFP), serves as a strategic solution for specialized vocational training. Designed to reorient, reskill, and reintegrate individuals, it enables them to perform effectively in an increasingly digital, global, and competitive landscape. Global interconnectivity and advanced analytics support the development of innovative didactic models, enabling both young people and adults to engage actively and entrepreneurially. In this context, entrepreneurship is seen as the ability to identify opportunities and implement projects that not only transform reality but also foster self-realization and make a positive community impact. This process involves generating and distributing both tangible and intangible wealth through innovation, knowledge, the arts, and philosophy, underscoring a dedication to personal and collective growth (Dolabela, 2003).

Defined by the Global Entrepreneurship Monitor (2022), global entrepreneurship encompasses the capacity to identify and exploit international market opportunities, thereby crafting innovative educational and commercial practices that surpass national boundaries. Characterized by innovation, creativity, and adaptability, this form of entrepreneurship is indispensable for navigating the complexities of diverse and continuously evolving cultural contexts. In the educational realm, especially in distance vocational training, global entrepreneurship focuses on preparing trainees with linguistic and cultural competencies that enable them to participate and contribute effectively in the global economy, fostering interconnection and mutual understanding among different cultures.

Thus, this research emerges with the ambition to adapt general didactic models for distance vocational training, based on heutagogy, a self-directed learning model proposed by Stewart Hase and Chris Kenyon in the 2000s. In this model, the

instructor acts as a facilitator of the training process, while the trainee is responsible for seeking the content to be learned and defining their own methodology, as discussed in various works (Blaschke, 2012; Hase, 2009, 2011; Oliveira, 2018; Kenyon & Hase 2001).

Furthermore, this study contributes to the development of an innovative didactic model for teaching foreign languages in vocational training, known as MDFP@, which is implemented through e-Learning. This model is characterized by its collaborative, cooperative, open, and flexible nature. E-learning, especially in the context of distance vocational training, offers several benefits. It provides flexibility, promotes digital inclusion, fosters learner-centered interactions, and reduces the need for physical travel, thus lowering associated costs. Distance vocational training thus emerges as a crucial pillar in the process of transforming society, enabling networked training and driving the (re)adaptation of individuals and institutions to the demands and competitiveness of the global society.

In this scenario, didactics in distance vocational training transcends the mere provision of materials and activities on online platforms; it requires active intervention from everyone in the teaching and learning process, enabling trainees to experience multiple learning scenarios that not only promote skills such as autonomy, critical reflection, creativity, and persistence but also prepare them for global entrepreneurship. Thus, didactics in distance vocational training became essential for teaching the English language and directly interlinked with global entrepreneurship, preparing trainees to act innovatively and adaptively in diverse international contexts.

2 Methodology

This study adopted a Developmental Research approach, integrating both qualitative and quantitative methods that are perfectly tailored for designing, developing, and validating the Didactic Model for Distance English Language Teaching (MDFP@), with a specific focus on global entrepreneurship. Particularly advantageous for training technology, this method fosters the creation of products and interventions within complex environments. Moreover, it provides a nuanced alternative to traditional approaches, which often yield overly simplistic and delayed responses to the intricate challenges of training (Monteiro et al., 2012).

The research aimed to develop a didactic model for teaching foreign languages, particularly English, in distance vocational training within an e-Learning context, following a participatory approach to information collection. This process facilitated continuous feedback on the model's development, steering the research toward not only descriptive but also prescriptive knowledge—practical guidelines for addressing and foreseeing challenges (Van Den Akker & Plomp, 1993).

The methodology consisted of four distinct phases. Initially, the Preliminary Investigation phase involved adapting a conventional face-to-face didactic model for digital delivery, utilizing the e-Trainer framework. In the second phase, the

Theoretical Insertion, theory was integrated into practice by structuring the course on the Moodle platform, aligning knowledge about e-Learning, didactics, and online teaching. This theoretical work was crucial to inform the decisions made during the development of MDFP@. The third phase, Empirical Testing, involved the practical application of the model and conducting tests and questionnaires to assess its efficacy. This phase collected empirical data crucial for validating and refining the didactic model. The fourth, and final phase, Documentation, Analysis, and Reflection, involved the detailed documentation and analysis of all development stages, assessing the efficacy of the model and the didactic strategies used.

The study was conducted at the Employment and Vocational Training Institute, focusing on trainers who transitioned to e-Learning as an alternative to conventional face-to-face training during and after the pandemic. Initially, 73 trainers from the Employment and Vocational Training Center in Leiria were selected; this sample later expanded to include 3311 trainers from various branches of the IEFP, IP, who declared their ability to provide training in English.

The MDFP@ model was devised in response to emerging requirements for effective pedagogical methods tailored to a globalized labor market. This model promotes entrepreneurial and linguistic skills crucial for teaching foreign languages in distance vocational training. The didactic strategies developed included creating innovative and flexible learning scenarios, respecting different learning styles and fostering a learner-centered approach, where learners are encouraged to manage their own learning process, anywhere and anytime, stimulating interaction and collaboration.

The adopted methodology not only allowed for the development but also the validation of a didactic model in teaching the English language, tailored to the specifics of distance vocational training and aligned with contemporary demands of vocational training and global entrepreneurship.

3 Theoretical Framework

The current demand for preparing citizens to meet the challenges of the twenty-first century has significantly driven research on entrepreneurial skills across scientific, business, educational, and training domains. Professional recruitment no longer solely relies on the assessment of technical skills but also values soft skills such as leadership, entrepreneurship, and the ability to adapt to dynamic environments, which are crucial qualities for the increasingly globalized labor market.

Recognizing the importance of education in promoting both mobility and the personal and professional development of its citizens, the European Union implemented the Entrepreneurship Competence Framework, known as EntreComp. Resulting from extensive research by the Joint Research Centre (JRC) in collaboration with the Directorate-General for Employment, Social Affairs, and Inclusion, this framework underscores entrepreneurship as a crucial competence, structured in three main areas: ideas, resources, and action. EntreComp unfolds into 15

fundamental competences and offers 442 learning outcomes, guiding the continuous training of teachers and trainers through the EntreCompEdu program (Castanheira, 2022).

Within this competence framework, vocational distance vocational training in foreign languages significantly benefits from the connectionist paradigm. This pedagogical approach is crucial for the development and implementation of innovative initiatives that use digital technologies to overcome the barriers of traditional education. Such an approach underscores the importance for trainers and trainees to adapt to dynamic environments and integrate essential skills such as creativity, critical thinking, and problem-solving into collaborative and interactive learning processes, thereby preparing them for the challenges of a globalized labor market (Drucker, 1985; Bates, 2019; Sarasvathy, 2001; McAlister, 2020). These pedagogical innovations are particularly manifest in the realm of foreign language teaching, which has experienced profound transformations, especially through advancements in e-learning.

In this context, the current research focuses on the acquisition of the English language through e-learning. It particularly emphasizes the relevance of the connectionist paradigm. This paradigm has been explored in various domains, including language acquisition, therapy, auditory processing, and reading. Unlike the traditional cognitivist model that relies on symbolically processed computer representations, the connectionist approach offers a dynamic alternative (Oliveira, 2018, p. 88).

Associated with parallel and distributed processing models featuring subsymbolic representations, connectionism provides a dynamic and flexible approach ideally suited to the entrepreneurial context of teaching foreign languages in vocational distance training. Connectionism thus presents itself as a cognitive paradigm situated between behaviorism and symbolism, seeking to provide answers in situations for which other paradigms are not satisfactory. In this vein, connectionism proposes a processing model that mimics brain function but is not limited to the "snapshots" of subjects' experiences that provide input for such processing. For connectionists, the declarative knowledge of language and the world, as well as the process of knowledge from a variety of skills, are not encoded in the brain in the form of fixed symbols that occupy designated places but as finely tuned elements distributed across different interconnected neurons. Transformation does not occur in series as in information theory, but in parallel, that is, many processes occur simultaneously (Poersch, 2005).

According to Finger & Quadros (2008), connectionism is not governed by fixed rules, but by the construction of associative patterns. Knowledge emerges from a simple processing network where connections are strengthened or weakened based on input, resulting in learning through gradual changes in the strength of neural connections. This characteristic is particularly advantageous for entrepreneurship, as it promotes instant and adaptive learning. The acquisition of speech, directed toward performance and integration into specific environments, is a consequence of extracting patterns from statistical and probabilistic inputs.

Connectionism advocates learning through analogies and interactions between environmental inputs and neural networks. Brain regions work concurrently to produce cognition through synapses, facilitating the transmission of electrical impulses between nerve cells. This process, known as Parallel Distributed Processing (PDP), modifies neural networks based on synaptic activity, integrating the algorithms used to train these networks. According to Rossa & Rossa (2009),

> Connectionism is a theory of knowledge that concerns itself with the entire process of acquisition, and therefore, it proposes to clarify learning and explain memory. The connectionist paradigm also demonstrates the close relationship between learning and memory, as there can be no learning without memory. (Rossa & Rossa, 2009, pp. 56–57)

Integrating connectionism within the framework of distance vocational training for foreign languages fosters an adaptive and proactive training model. This model is crucial for the development of entrepreneurial skills, particularly the capacity for innovation. Such an approach not only prepares trainees to enter a global and highly competitive labor market but also emphasizes the importance of cognitive processes, in which long-term memory plays a key role in consolidating learning and retaining knowledge.

Consequently, by applying connectionist principles to distance language training, we are faced with a pioneering vision of global entrepreneurship, characterized by knowledge that is constantly adjusted and recontextualized. This perspective enables creativity and innovation, which are essential elements for contemporary business dynamics.

Furthermore, by focusing learning on problem-solving and fostering critical thinking, the connectionist paradigm empowers trainees to overcome the complex challenges they encounter in global entrepreneurship settings. In these environments, it becomes crucial to possess adaptability and innovative competence, as these skills are indispensable for achieving success in international and multidisciplinary contexts (Figueiredo, 2019; Valente 2022).

3.1 Didactic Strategies in Distance Vocational Training

The term "didactic" is etymologically derived from the Greek expression *technédidaktiké*, signifying the art or technique of teaching. Comenius' work, *Didactica Magna*, written in the seventeenth century, is identified as the first significant milestone in didactics and gradually became popular in pedagogical literature. Didactics initially emerged with teaching as its object of study, influenced not only by its etymological meaning but also by the character Comenius imbued in it.

> Didactics is defined as the art of teaching […]. Comenius promised in 'Didactica Magna' a universal teaching method, capable of educating everyone effectively and enjoyably. And to teach with such certainty that it is impossible not to achieve good results. And to teach swiftly, that is, without any tedium or annoyance for the students and the teachers, but rather with utmost pleasure for both. And to teach solidly, not superficially and merely with words,

> but by guiding the students towards true instruction, good manners, and sincere piety. (Comenius, 1621–1657, pp. 3–4)

According to Rivilla & Mata (2009), didactics is

> the discipline or rigorous treatise on the study and foundation of the teaching activity as it facilitates the formative learning of students in the most diverse contexts; with particular impact on the improvement of regulated educational systems and the micro and meso communities involved (school, family, multicultural and intercultural) and non-formal spaces […] guided by educational purposes and committed to achieving the improvement of all human beings, through the understanding and permanent transformation of socio-communicative processes, and the appropriate adaptation and development of the teaching-learning process. (Rivilla & Mata, 2009, p. 7)

Didactics is closely related to the objectives, contexts, and processes of teaching. These result from the perfect combination of the trainer's role and the autonomous, reflective, and creative activity of the trainee, through the understanding and transformation of socio-communicative processes that will contribute to the development of the teaching and learning process itself. As a field of study, didactics has evolved significantly, reflecting shifts in training practices and methodologies.

Nowadays, didactics is concerned with investigating various aspects, including the teaching and learning process that occurs in virtual contexts. Behind this evolution are cultural factors, changes in ways of life, work, and the organization of the teaching and learning process in a systematized manner (Beneli, 2014). Meanwhile, the evolution of digital technologies has been providing contact among learners around the world, allowing, at the same time, exchanges of knowledge. "The teaching and learning process extends beyond traditional classrooms, now facilitated through knowledge exchange in diverse social organizations" (Mello & Barros, 2014, p. 7).

In this context, distance vocational training stands out, as it allows learners, among many other things, to reflect and learn in a more flexible and autonomous manner. For such learning to occur, it is not enough to simply have knowledge about a subject; it must be mobilized in work situations. As advocated by authors like Dias (2013), Garrison (2000), and Mello & Barros (2014), the need becomes evident to rethink didactic intervention in vocational training through e-learning in a way that not only enables learners to acquire knowledge but also guides them toward comprehension-action through effective mediation. These didactic strategies are particularly relevant for teaching foreign languages in distance vocational training and should include the simulation of scenarios and the promotion of collaborative projects that utilize diverse educational resources. To further illustrate these concepts, the subsequent figure systematizes the elements that constitute didactics for teaching English in distance vocational training (Fig. 1).

These elements not only foster the linguistic competence of trainees but also develop entrepreneurial skills, preparing them to apply these skills innovatively and entrepreneurially in global professional contexts. These didactic practices are essential for having trainees who not only master a foreign language, with emphasis on English, but who are also capable of using it strategically in an increasingly globalized scenario.

Fig. 1 Elements of didactics for teaching English in distance vocational training. Source: (Valente, 2022)

In a learner-centered pedagogical context, it is important to consider individual and cultural variation in cognition, which contrasts with universal notions of the human mind. This recognition is vital in the realm of vocational training, particularly when we reflect on redefining learning as a process more psychological than mechanical (Lixian & Cortazzi, 2000). It should also be considered that learning styles represent differences in individual learning methods. These styles are strongly influenced by culture, as highlighted by Barmeyer (2005).

> culture is determined by socialization through institutions such as family, friends, school, universities and work. All of these factors influence the development of learning styles, help to create a system of shared values, assumptions and knowledge, determine people's perception, interpretation and problem-solving methods. These cognitive capacities are learned during a socialization process and influence the individuals' specific methods. Consequently, culture can be related to the development of learning styles. (Barmeyer, 2005, p. 586)

Therefore, according to Barros (2020), learning styles should be considered as varied learning opportunities, not only to respect the different ways of working, thinking, and learning of each student individually, which are closely linked to individual cognitive schemas and conditioned by cultural socialization, but also to give students the opportunity to learn to solve a problem or task in another way, and preferably, in close collaboration with other learners (Pritchard, p. 56).

This approach is crucial in environments for teaching foreign languages, notably English for global entrepreneurship, where the ability to adapt and respond to diverse needs and cultural contexts can define a trainee's success. Therefore, it is important that distance vocational training programs, particularly those focused on global entrepreneurship, incorporate a personalized approach that meets the individual and cultural needs of the trainees. This not only enriches the learning

experience but also prepares trainees, for example, to work in global markets, where cultural understanding and adaptability are valued as highly as technical knowledge. In this line of thought, personalization in the teaching and learning process for global entrepreneurship in distance vocational training is a dynamic process that requires continuous evaluation of pedagogical strategies to ensure that all trainees not only acquire knowledge but also develop crucial skills for their performance in international, intercultural, and multicultural contexts, as can be seen in the following figure (Fig. 2).

The construction of the synthesis figure of the ten competencies for teaching foreign languages, specifically in distance vocational training, was grounded in studies and scientific knowledge highlighted in the theoretical framework of this research. The development of the object of study, complemented by practical experience, facilitated the proposed systematization. For this chapter, the entrepreneurial competencies stand out as extremely relevant in the distance teaching of the English language, promoting the trainee's autonomy and empowerment in the individual or collective construction of knowledge. These competencies also stimulate tolerance for uncertainty and the ability to adapt to different scenarios, enabling the trainee to lead in the teaching and learning process (Garrison et al., 2000; Garrison, 2003).

Distance English language training, especially when aimed at global entrepreneurship, requires a broad, rich, and comprehensive approach, demanding an expanded set of competencies from those involved in the training process. In this context, trainers must be adequately prepared to face the challenges of the teaching and learning process, which not only encompasses multiple functions but also promotes essential skills for the global labor market. In this scope, the IEFP promotes the updating, improvement, and acquisition of new didactic competencies for teaching English through continuous pedagogical training of the Distance Trainer (e-Trainer). This training covers various domains of action, including the design,

Fig. 2 10 Competencies in teaching foreign languages in distance vocational training. Source: (Valente, 2022)

development, and implementation of programs in a distance learning context, which is well-suited to today's life rhythms.

It is also important to emphasize that the continuous training of the distance trainer (e-Trainer) further addresses the adaptability demands of those involved in the training process, to new professional skills related to technological competencies and the digital agenda, as well as the changes occurring in the world of work, qualification, and employment (IEFP & TecMinho, 2018).

In digital environments, it is essential that the trainer pedagogically reflects on the tools and activities to be employed, adapting to the needs of geographically dispersed trainees. Practical training strategies should be developed to facilitate individual, group, and networked work, respecting individual learning paces and promoting an inclusive and diverse approach. The learning strategies adopted should consider the objectives, necessary competencies, and the curriculum, in order to enrich the activities and exercises proposed.

This personalized working methodology requires continuous reorganization and improvement of didactic techniques to ensure that trainees learn English more effectively and are aligned with the demands of global entrepreneurship. The personalization of teaching and learning strategies facilitates the training process by meeting the specificities of each trainee, promoting inclusion and empowerment simultaneously. This approach allows trainees to actively participate in the training process, suggesting ideas, creating scenarios, and incorporating their cultures into the global digital environment.

4 Conclusion

The primary emphasis was on designing and implementing the innovative didactic model MDFP@, specifically tailored for teaching English in an e-Learning context. This model has demonstrated strategic effectiveness in responding to the demands of a globalized and continuously evolving labor market.

Throughout the research, it became evident that the MDFP@ not only facilitates the development of essential skills in both young people and adults (Figueiredo, 2019; Valente, 2022) but also promotes autonomous learning tailored to the dynamics of global entrepreneurship. The implementation of this model involved structuring diverse didactic pathways, enhanced with advanced digital tools and pedagogical strategies that maximize interactivity and personalization of training, as suggested by Barros (2020).

The MDFP@ represents an advancement in teaching foreign languages in distance vocational training, integrating active methodologies that substantially improve the trainees' experience and effectively meet the delineated learning objectives. The results of this study show that the model not only enhances the linguistic competencies of trainees but also equips them with crucial entrepreneurial skills, such as cultural adaptability and innovation, necessary for success in dynamic international markets.

This research suggests that expanding this model could contribute to a higher-quality training offering by the IEFP, IP, and also ensure that the skills required by the twenty-first-century market are effectively developed, benefiting both the unemployed and the employed. These findings support the assertion that innovative didactic strategies aligned with global entrepreneurship offer valuable guidelines for future applications in the context of vocational training, ensuring adaptive learning that meets the demands and challenges of trainees in the digital age.

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