

Article

The New Progression Model of Entrepreneurial Education—Guideline for the Development of an Entrepreneurial University with a Sustainability Approach

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Abstract: Entrepreneurship is becoming understood as a set of competencies needed for many professions and, as a result, requires to be integrated into higher education even in such seemingly distant areas as, e.g., public administration, sport, agriculture, tourism, etc. Therefore, there is a need for research-based guidance on how to introduce and develop entrepreneurial education as an enabling approach to the transition in higher education that could serve as an integral part of a paradigm shift towards an entrepreneurial university. This paper aims to support that transition and to address related challenges by the presentation of a new progression model, which provides guidelines for the development of courses at the tertiary level with an entrepreneurial university approach. The construction of the new applicable model is central to the purpose of this study and based on a systematized literature review. Additionally, the input–process–output–outcome framework, originally constructed for the evaluation of educational programs, was adapted to the incorporation of an overall framework into the new model. In the results, the paper redefines some of the relevant core terms, such as “entrepreneurial education” and its “progression model”. The research outcomes offer broad practical and theoretical applicability to a range of stakeholders—educators, students/learners, industry/business, policy makers, and researchers.



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1. Introduction

1.1. Context

The paradigm of higher education is shifting from the traditional towards an entrepreneurial university, giving different meanings of this term [1–4]. As the role of academic institutions in stimulating, therefore contributing to, the development of the modern knowledge-based economy has become widely accepted [5], the entrepreneurial university concept in practice has been facilitated by the collaboration between universities, government entities, and industrial partners, as outlined by a triple helix model [6]. So far, the main research has been focused on industry–university relations with respect to technology transfer [7] or university–business cooperation [8]. This approach to the entrepreneurial university is sometimes expanded by introducing novel elements into its conceptual framework such as the creation of new spin-off firms [9].

However, the author is convinced that the entrepreneurial university should be much more than just selling knowledge to the industry, gaining commercial orders from external stakeholders, or even more than new venture creation. Instead, the entrepreneurial

university approach should be further expanded to drive societal change responding to sustainability requirements. The expansion of the concept would also allow for the application of the latest scientific interpretative frameworks such as the evolving nature of innovation models from the triple towards quadruple and quintuple helix models [10] in response to various challenges, not only for affected stakeholders, but society at large and its natural environment.

Moreover, entrepreneurship is increasingly understood as a set of competencies needed for many professions to be integrated into education and training, even in such seemingly distant areas as, e.g., public administration [11], sport [12], agriculture [13], or tourism [14] (p.186). This tendency towards an understanding of entrepreneurship in a broader way and, at the same time, a growing need for inclusion of sustainability issues in education, should consequently lead to the expansion of the concept of the entrepreneurial university.

So far, sustainability challenges faced by academic and economic stakeholders of higher education institutions (HEIs), society, and the natural environment have been recognized by the innovation models such as the quintuple helix model. The HEIs response has been, for example, an inclusion of knowledge transfer in their processes and a focus on creation of value for others in teaching/learning topics. It may take place as a part of projects, internships, assignments, etc. and lead to the development of valuable skills, such as the ability to recognize opportunities and find inspiration for new initiatives and innovation where most others face only problems and difficulties (such as climate change, pandemic, etc.). Simultaneously, these problems require new methods of teaching/learning (e.g., action learning vs. theoretical learning) and new theories development (e.g., experiential learning theory). In a response, the author draws on several concepts from experiential learning and action learning to provide descriptions of different learning activities undertaken in the course of the transformation from traditional education into entrepreneurship education.

Consequently, the main focus of the paper is on conceptual approach and includes explorative analysis with policy implications.

1.2. The Relevance and Currency of the Research Questions to Be Examined

The result of the higher education transition towards an entrepreneurial university—hardly explored so far—is the inclusion of entrepreneurial education into many other possible academic studies and courses far beyond the range of business studies and economics. That process has been initiated in higher education at the national level by some institutions including the Danish Foundation for Entrepreneurship [15]. So far, however, it has remained prevalent that educators are often unprepared to support the development of entrepreneurial competencies and skills in the course of teaching their subjects. The existing publications in favor of this approach and concept do not provide guiding principles for practitioners on the applicable methods [16], which is especially valid for higher education [17].

Additionally, entrepreneurial education models are rare [18], and the existing ones have not been intended as means of supporting the implementation of an entrepreneurial university concept with sustainability approach inclusion. Therefore, research-based guidance is needed on the possible ways for the introduction and development of entrepreneurial education as an enabling approach to the transition in higher education that could support and reinforce a desirable paradigm shift towards the practice of sustainable-based Entrepreneurial Universities.

This paper aims to support that transition and address related challenges by the presentation of a new progression model, which provides guidelines for the development of courses at the tertiary level with that new approach.

1.3. Aims and the Objective

The related core research questions have been framed in the following way: 1. How can a model of entrepreneurial and sustainable education be formulated? 2. What should define the integral parts of that model in order to permit its broad application?

In response to these questions, the paper intends to argue for a progressive model for entrepreneurial higher education (also called ‘the Model’ or the MEHE hereinafter) with the inclusion of sustainability issues and presents the relevant background research findings. The integrative scope of the Model is manifested in the combination of a selected range of elements—educational inputs, processes, outputs, and socio-economic outcomes—into its frame of analysis and evaluation as well as in the very construct of it, which is not country-specific, but instead, it offers a wide range of applicability.

Taking the research questions into consideration, the thesis of the paper is formulated as follows: sustainability is under-represented in the educational models and in the progression models of entrepreneurial education. As a result, there is a need for a new progression model with a sustainability approach.

The approach inherent in the above statement does not simply call for a new pedagogical method, but rather promotes a re-conceptualization of how educators and students could become co-constructors of the learning experience in order to develop entrepreneurial competencies while gaining course-specific knowledge at the same time.

Consequently, the objective of the paper is to critically reflect on how theories, concepts, methods, and findings from other bodies of inquiry can be applied to improve an understanding of entrepreneurial education while filling the gap in the entrepreneurial education modelling with respect to the inclusion of the sustainability-related aspects, and how it can be implemented in a new context of an entrepreneurial university framework.

1.4. Main Conclusions of the Research

The paper redefines some of the relevant core terms related to the subject matter, such as “entrepreneurial education” and its “progression model”. The construction of the new applicable model is central to the purpose of this study and based on an original methodology, combining both a systematized literature review and a detailed analysis of the progressive models of entrepreneurial education with a focus on the inclusion of sustainability elements.

The research result offers broad practical and theoretical applicability to a range of stakeholders—educators, students/learners, industry/business, policy makers, and researchers.

2. Literature Review

The author has identified three strands of scientific literature incorporated into research on entrepreneurial education. The first aspect is connected to the conceptualization of the terms entrepreneurship and entrepreneur and their typologies [3,19,20]. The second one examines the development of a framework that highlights the role of educational inputs to achieve more entrepreneurial outputs, analyzed mainly with respect to entrepreneurial intentions [21,22]. A third avenue is also brought into the scope of study to examine the predominant influence of demand for educated graduates with more entrepreneurial perspectives prepared by the higher education system [3,23,24], stimulating the development of the concept of an entrepreneurial university and the share of experiences coming from its implementation [3,4].

2.1. Educational Inputs

The conducted and accomplished literature review proves that the definition of an entrepreneur has expanded over the last two decades from its originally narrow understanding of “a company owner or a self-employed person” [25], to a broader perspective by denoting a person who looks for possibilities to launch a new undertaking, able to spot market opportunities and exploit those by means of their own firm or as a part of their profit-oriented/business-motivated private activities [26,27].

A number of literature reviews on the concepts of an entrepreneur and entrepreneurship connect them with entrepreneurial competencies [3,28]. Those competencies are affected by certain personal characteristics, which can be developed and strengthened within the system of education. Among those characteristics are, e.g., creativity [29,30], innovation [31], imagination [29], problem-solving skills [28,32], degree of risk aversion [31,33–35], alertness [29], motivation [29], and willingness to take calculated risks [30].

Furthermore, the orientation of entrepreneurs towards action and engagement plays a significant role in the perspective of educational inputs, which requires the inclusion of some elements of experience and discovery in the entrepreneurial learning process [28,36] often associated with experiential learning [13]. It underlines the necessity to incorporate “effectuation development” in the educational process, especially at the higher education level [28]. Certain observers, such as Mansoori and Lackeus [37], have stressed that entrepreneurs learn through value creation and action, which has been confirmed by other authors [13].

Some important correlation between successful entrepreneurship and efficient entrepreneurial education can be identified in the value and relevance of teamwork for both aspects [37,38], as demonstrated by the fact that the majority of successful firms have been started by teams rather than solo entrepreneurs. Likewise, the experiential entrepreneurial learning process (mentioned above) is significantly more efficient when accompanied by a cohort-based system [38,39]. The reason is that “social learning”, as it is sometimes called [13], facilitates the development of social capital. This arguably enables access to resources, including knowledge and skills. The ongoing multiple perspectives exposure can also significantly facilitate an easier absorption and application of knowledge into the learning process.

With respect to examples of entrepreneurial topics to be incorporated into a broad range of courses at the higher education level, there is a proven need for learning and understanding the importance of opportunity recognition, work–life balance, emotion management, learning from failures, and entrepreneurial mindset [28] in addition to other issues, such as knowledge transfer, directly associated with the implementation of an entrepreneurial university concept.

Interestingly, an entrepreneurial education that includes in-built inspirational part(s) producing positive attitudes and intentions [40] could be expected to prove especially effective in increasing the chances that students eventually set up their own businesses and launch enterprises.

It has also become clear that entrepreneurial self-efficacy can be strengthened by appropriate training and is fundamentally important in the activation of entrepreneurship [22,41].

2.2. Desired Outputs of Entrepreneurial Higher Education

The existing research on the outputs of entrepreneurial education has been almost entirely limited to the narrow understanding of entrepreneurship [28], and specifically, to the launch of new business ventures, self-employment, faculty-led start-up ventures, spin-off firms, and start-ups launched by entrepreneurial students and graduates of higher education systems [3].

The development of the MEHE, which corresponds to the wider sense of entrepreneurship and an entrepreneur, aligns this paper with the understanding that the most difficult and important question that entrepreneurial higher education needs to solve is how to make students more entrepreneurial during and after their higher education advancement.

A growing number of research results indicate that higher education in itself might develop entrepreneurial competencies, which increase the competitiveness of the firms [21,28,42] most efficiently taking benefit of those learned skills and perspectives. In particular, the entrepreneurial skills acquired during advanced education have been proven to highly correlate with entrepreneurial ability to enter the market and face competition [43]. This is so because higher education develops a certain “personal theory of practice” in university

students (understood as the ability to apply theory in a practical context): it provides them with tools to minimize risks and to develop systematic decision-making skills. In essence, advanced education enables graduates to face uncertainty with greater confidence through the skillful allocation of resources and the exploitation of market opportunities—competencies that are conventionally attributed to business entrepreneurs [21,44]. Research indeed confirms that longer and more intensive studying, which is associated with a higher education level, increases the chances to develop entrepreneurial skills, e.g., critical thinking, opportunity recognition, evaluation and exploitation [28], teamwork, communication, etc. [14,43]. In addition, educational achievements are indicative of high levels of ambition, motivation, and endurance [43], which contribute to a positive entrepreneurial attitude and mindset. Accordingly, it can be inferred that advanced education fosters the development of business acumen, even if the knowledge and skills gained in formal education are not directly related to entrepreneurship.

The existing analyses confirm a positive association of entrepreneurial education with human capital assets considered essential for entrepreneurship such as knowledge, skills, positive perceptions of entrepreneurship, and entrepreneurial intentions [14,45]. Several sources in the relevant literature have also started to identify the effectuation as the desired output of entrepreneurial education [28,37].

The results of EE also involve innovation and venture creation, which may include not only forming a new organization but also a new activity such as the launch of a new project [14,46].

In addition to the provision of teaching, higher education also offers access to important social networks such as alumni networks or student organization networks [30]. In the context of business formation or any other entrepreneurial activity, this translates into access to scarce resources, potential key suppliers, and clients, which are paramount for entrepreneurial success.

Interestingly, the most advanced educational levels—such as Ph.D. or postdoc positions—tend to discourage graduates from launching their own companies. The most probable explanation may be found in the qualifications and cognitive advantage many students and graduates can acquire in the form of skills and marketable professional knowledge during their BA and MA studies. Their endowment of “educational capital” may easily open avenues to explore and pursue valuable opportunities as employees of others without the risk of their own business venture, especially in an economic environment of high labor demands. This applies particularly to the fast-growing and innovative activities driven by venture capital investment in enterprises—start-ups or more established companies—that recruit a workforce with the seeds and strands of entrepreneurial qualifications and skills [43,47]. As a consequence, graduates of higher education are likely to launch companies in knowledge-based industries (technologies, finance, real estate, insurance, etc.) and innovative businesses [32], while graduates of even more advanced educational levels are more likely to become employed by those companies. Both types of graduates, nonetheless, can be entrepreneurs in the wider sense.

2.3. Desired Entrepreneurial Education Outcomes

The aggregate outcomes of entrepreneurial education are socio-economic developments and human welfare [46,48]. Both educators and policymakers recognize entrepreneurial education as a means of macroeconomic growth and job creation [49]. It also supports an expansion of a knowledge-based society and a promotion of entrepreneurial economy and innovation culture [14]. Furthermore, the broad benefits comprise the creation of added value to societies while promoting social awareness and engagement from all actors involved, in addition to strengthening entrepreneurial behavior and entry [32].

2.4. Entrepreneurial Education Models

To address the aforementioned challenges and expectations towards entrepreneurial education in terms of its inputs, associated processes, desired outputs, and broad outcomes,

both the linear and progression models of EE have been reviewed and critically analyzed for the purposes of this paper. The author recognizes that these models are rare, especially their progression representations intended to solve the problem of differing definitions of entrepreneurship, intended learning outcomes, and pedagogical approaches [18].

A common understanding of the progression models of entrepreneurial education relies on a renewed organizational perspective, and “progress” is understood in terms of the incorporation of various aspects and issues of entrepreneurship into the successive stages of formal education, usually starting, in some form, in primary school and finishing at college or university level.

3. Materials and Methods

3.1. Data Collection

The data for the literature review were collected from articles published in the following scientific journals: *Journal of Business Venturing* (JBV), *Entrepreneurship Theory and Practice* (ET&P), *Small Business Economics* (SBM), *Entrepreneurship and Regional Development* (E&RD), and *Higher Education* (HE).

3.2. The Assessment Frame and Research Questions

The qualitative data gathered through literature review were analyzed using content analysis following the logic of the IPO process [50] and guiding the overall design of the new progression model, which also created the basis for organizing the data to draw conclusions.

3.3. Data Analysis Methods

The data were grouped on the basis of the content analysis, which was realized as follows:

- Firstly, an in-depth systematized literature review [51] was accomplished to gain insights into the conceptual framework, inputs, processes, outputs, and outcomes of entrepreneurial education (EE).
- The criteria for the selection of articles to be reviewed for the study were based on certain words included in titles, abstracts, or keywords, such as “entrepreneurship”, “entrepreneurialism”, “entrepreneurial education”, “entrepreneurship education”, “entrepreneurial university”, or “entrepreneurial universities”.
- In the end, forty-one articles that satisfied the criteria were rigorously studied for the qualitative content analysis in view of the purposes of this paper, and the resulting relevant findings constitute the ground for the observations in the first part of the paper.
- The underlying information was drawn from a database along with the subject matters and aspects of IPO that are the desired entrepreneurial education inputs, processes, outcomes, and conceptual framework. The convenience sampling technique was applied.
- Secondly, the discussion delves more deeply into the subject of entrepreneurial education modelling, presenting the existing approaches with a focus on the inclusion of sustainability issues in the progression models of entrepreneurial education.
- Thirdly, a new progression model of entrepreneurial education is constructed, and the research findings are presented in a comprehensive and systematic way, starting from educational inputs, processes, and outputs and concluding with societal as well as economic outcomes.

The study is built on three theories incorporated in the foundations of the new model: the theory of entrepreneurial learning processes [52,53], the theory of students’ entrepreneurial competency development [28,42,54], and the theory of entrepreneurial intentions [41,55].

The first theory centers on three crucial aspects of the learning process in entrepreneurial education encompassing skills development, entrepreneurial mindset preparation, and theories development.

The second theory builds on and connects to the previous one but focuses on the development of entrepreneurial competencies understood as the combination of skills, attitudes, and knowledge.

The third theory connects entrepreneurial education with the necessity to strengthen entrepreneurial intention, understood as a combination of entrepreneurial knowledge, perceived desirability towards entrepreneurship (attitudes and social norms), and perceived self-efficacy.

The main concepts and models used from the literature include the learning loop process and the progression models of education. Among constituted milestones of the learning loop process are theorization, experience, action, and reflection [56]. Additionally, the progression models in the context of education are understood as the successive stages of formal education, starting from primary and finishing at college or university level.

Since collaboration between universities, governmental entities, and business remains at the foundation of the entrepreneurial university, knowledge transfer becomes integrated into the new paradigm of higher education. As a result, the applied triple helix model [6] becomes superior to the model's other processes and elements by placing special emphasis on the collaborative interactions between university stakeholders.

The article proceeds along the following line of analysis: first, the results of systematized literature review in relation to prescriptive work in entrepreneurial education are elaborated; then, the comparative analysis of progression EE models is presented. The result, together with findings from the literature review, leads to the construction of the new model. A number of issues arising from this model are discussed, followed by an articulation of implications for the theory, practice, education, and policy.

4. Results

Taking the presented results of the literature review into consideration, the author defines entrepreneurial education as an essential pedagogy-driven dimension of a transition of HEIs towards a practice of a more entrepreneurial university model by incorporating the development of entrepreneurial competencies. In the author's assessment, it requires the inclusion of entrepreneurial skills, knowledge, and attitudes into a broad range of academic curricula, not just entrepreneurship or business studies.

Entrepreneurial education at the university level, understood and implemented on the ground of the above defining qualities, can be expected to create "entrepreneurial graduates" who are prepared by the higher education system to demonstrate entrepreneurial competencies in their professional activities. The model presented below is constructed and presented with the purpose to exemplify how to implement that concept.

The learning process lends support to the construction of the Model as it encompasses three types of provision: training aimed at skills development, entrepreneurial mindset preparation, and theory development [28,52].

Contrary to a current understanding of the progression models of EE, the author offers an understanding by which the progressive character of the proposed Model is associated with a different pedagogical approach and purpose of entrepreneurial education rather than with formal educational levels and, as a consequence, progress, in the form of enabling transformation, can be manifested within a single educational stage—in the case of this paper—namely the last one: higher education. Consequently, a "progression" model of EE is defined by the author with that new focus as a pedagogy-driven approach involving learning through the successive stages of a learning loop process comprising theorization, experience, action, and reflection. The pace of the process and its starting point is subject-specific and dependent on its main stakeholders—academics and students.

4.1. Comparison between the Models

Evaluation of whether sustainability is represented in the educational models required the performance of detailed comparison. The progression models of entrepreneurial education were considered for this purpose as they represent the most advanced form of EE modelling. The analysis of the four models was developed in ten steps and included an in-depth comparison between three existed models and the newly constructed one—the MEHE (see Table 1).

Table 1. Sustainability in the progression models of entrepreneurial education.

	British-Based Model [17]	Danish-Based Model [15]	Integrated Model [18]	MEHE
INPUTS				
Educational inputs:	Detailed for every educational level.	Include action, creativity, attitude, environment.	Assignments resulting in teamwork and value creation.	Inputs in a form of problems to be solved come from external stakeholders and lead to value creation for the environment, society, etc.
Entrepreneurial competencies:	Detailed for every educational level.	Importance of innovative and entrepreneurial competencies.	Focus on value creation.	Combination of 1. skills, i.a., critical thinking, problem-solving, creating values for others, teamwork; 2. attitudes, i.a, creativity, imagination, innovation, empathising with stakeholders needs; 3. subject-specific knowledge.
Teaching topics:	not specified.	not specified.	not specified.	Includes, i.a., environmental knowledge and interaction with the outside world, work–life balance.
Pedagogical approaches:	Includes, i.a., work and society related model.	Includes, i.a., value creation for others, creativity development, environmental connectivity.	Includes, i.a., taking action by addressing societal challenges, sustainable venture creation.	Includes, i.a., experiential learning, social learning, value creation for external stakeholders, creativity development.
Stakeholders:	A general approach to stakeholders.	A general approach to stakeholders.	A general approach to stakeholders.	Both internal and external stakeholders, i.a., environment.
Highlighted features:	Building the networking capacity.	Action, creativity, attitude, environment.	Team-based approach, value creation, outside-world connectivity.	Environmental knowledge and interactions, transfer of knowledge (ToK), value creation for external stakeholders.
PROCESSES				
Process(es) included in the model:	Start-up process simulation.	Value-creating entrepreneurial processes, entrepreneurial and innovative processes.	The educational process starts from “Education through entrepreneurship”, proceeds with “Education about and through entrepreneurship”, and ends with “Education about, for and through entrepreneurship”.	Application of: 1. IPO process, 2. Entrepreneurial learning process—the <i>learning loop</i> , 3. Process of knowledge transfer.
Transfer of knowledge (ToK):	ToK only mentioned.	ToK is indirectly mentioned in the pedagogical approaches by recommendation to connect to the environment outside the school.	ToK mentioned in relation to value creation.	ToK is applied.
OUTPUTS				
Approach to entrepreneurship:	Wide	Wide	From narrow to wide	Wide
OUTCOMES				
Main outcomes:	Not specified	Not specified	Jobs creation and economic growth.	Socio-economic development, human welfare, expansion of knowledge-based society, strengthened entrepreneurial behavior and entry, promotion of entrepreneurial economy, innovation culture, social awareness, and engagement.

Source: Authors' elaboration.

The comparison between the models leads to the conclusion that sustainability is under-represented in the existed EE models, especially with respect to

- Educational inputs,
- Recognition of main stakeholders of EE,
- Entrepreneurial competencies to be developed,
- Teaching topics propositions, which could touch upon sustainability issues, and
- Desired main outcomes of EE.

4.2. Presentation of the Model

The construction of the model starts from the input–process–output–outcome framework, in which the identified elements critical for EE are incorporated together with the relationships between them, whenever it was found supportive of better communication of the model's logic to its stakeholders.

5. Discussion

The postulated expansion of an entrepreneurial university approach creates a new response to some of the concept's criticism about the perceived growing dependency of higher education institutions from the industrial and business partners or sponsors. That new answer comes from the shift of the main focus from HEIs' external stakeholders towards internal stakeholders—educators and students. It is important to emphasize scientific advances and conceptual improvements in the understanding and explanation of the evolving nature of innovation models—triple, quadruple, and quintuple helix models—in response to challenges facing academic and economic stakeholders, society, and the natural environment, respectively, which are included in the Model by its emphasis on knowledge transfer through the creation of value for others. It may take place as a part of projects, internships, assignments, etc., leading to the development of valuable skills such as the ability to recognize opportunities and find inspiration for new initiatives and innovation where most others face only problems and difficulties (such as climate change or pandemic). With respect to value creation, the Model encourages the main stakeholders—educators and students—to consider not only financial rewards, but instead, recognize the possibility for the creation of broadly understood economic, social, and ecological values.

Since entrepreneurship is understood as a set of competencies needed for many professions, higher education requires the integration of entrepreneurial approaches into the educational methods of possibly all suitable courses in BA and MA program. Consequently, understanding the benefits and importance of teaching, sharing, and transferring certain entrepreneurship skills and competencies in broader terms would lead to the expansion of an entrepreneurial university framework by enriching its concept with pedagogical elements, means, and methods oriented towards that purpose.

In order to avoid the usual pitfall of entrepreneurial education research by neglecting the theory-based methodology [28], the current study was built on three theories of entrepreneurial education incorporated in the foundations of a new model. These theories include competencies theory, theory of learning processes, and entrepreneurial intentions theory. In the Model, the author has identified conceptual connections between all three of them. That integration was possible as the competencies theory distinguishes knowledge, skills, and abilities as its constituents, the theory of learning processes details how to develop competencies for outward-facing, task-oriented, and socially beneficial activities, and the entrepreneurial intentions theory aims at the student's internal entrepreneurial development. Additionally, according to the resulting new Model, the conceptual and methodical foundations for the definition, development, and transfer of knowledge relevant for entrepreneurial initiatives and accomplishments represent the theoretical aspect of entrepreneurship education, whereas skills and attitude development are recognized as practical aspects (see Table 2).

Table 2. Entrepreneurial competencies development.

Competencies	Skills	Attitudes	Knowledge
	practice-oriented aspects of entrepreneurship		theory-oriented aspects of entrepreneurship
	↓↑		↓↑
Learning process provisions:	training aimed at skills development	entrepreneurial mindset preparation	theories for the development and transfer of knowledge
	↓↑	↓↑	↓↑
Entrepreneurial intentions/motivations:	perceived feasibility understood as self-efficacy	perceived desirability (attitudes, social norms)	acquisition of entrepreneurial knowledge

Source: Authors' elaboration based on Fayolle [28], and Linan and Chen [55].

Direct linkages between elements of the theory of the learning processes and those of the entrepreneurial intentions theory offer the opportunity to increase the results of entrepreneurial education by purposefully leveraging the three types of learning provisions to strengthen the entrepreneurial intentions/motivations. The extent to which opportunities for synergies are identified and harnessed depends not only on the entrepreneurial competencies of educators but also on the principles that guide the educational process in the design of the applied methods and choice of teaching approaches in addition to the teaching interactions with students.

Moreover, as outlined below in Figure 1, the resulting model manifests the recognition that the four stages of the “learning loop process” are recurrent and that the learning loop may start at different stages, not just at the stage of theorization.

Educators and students constitute the internal stakeholders of the Model. The skills of educators may prove decisive as the implementation of entrepreneurial education to a curriculum could greatly depend on their specialized and entrepreneurial knowledge, skills, motivation, competencies, but also on the choice of teaching approaches and teaching interactions with students, together with the educators' sense of ownership in that process. At the same time, the students are active participants in entrepreneurial learning by adding to the process their motivation, earlier experiences, and competencies. Both stakeholders are bound in the pedagogical process conceived to instill appropriate competencies, which include entrepreneurial skills and attitudes, besides specialized knowledge. Most importantly, the university support for educators and students would be required to smoothly adjust to new educational challenges by organizing appropriate entrepreneurial training.

At the curriculum level, the entrepreneurial process correlates with the educational design and simultaneously, entrepreneurial perspectives in learning/teaching are central to a sound transfer of knowledge.

The adaptability of the model to any subject is facilitated by the inclusion of teaching topics that are subject-specific but framed from an entrepreneurial perspective.

The intended educational outputs should be defined as the development of adequate entrepreneurial competencies and the proper understanding of social capital. That can further translate into a direct connection to important social networks, which can be crucial for entrepreneurial success, as it could greatly facilitate access to key resources, suppliers, potential clients, and valuable market information.

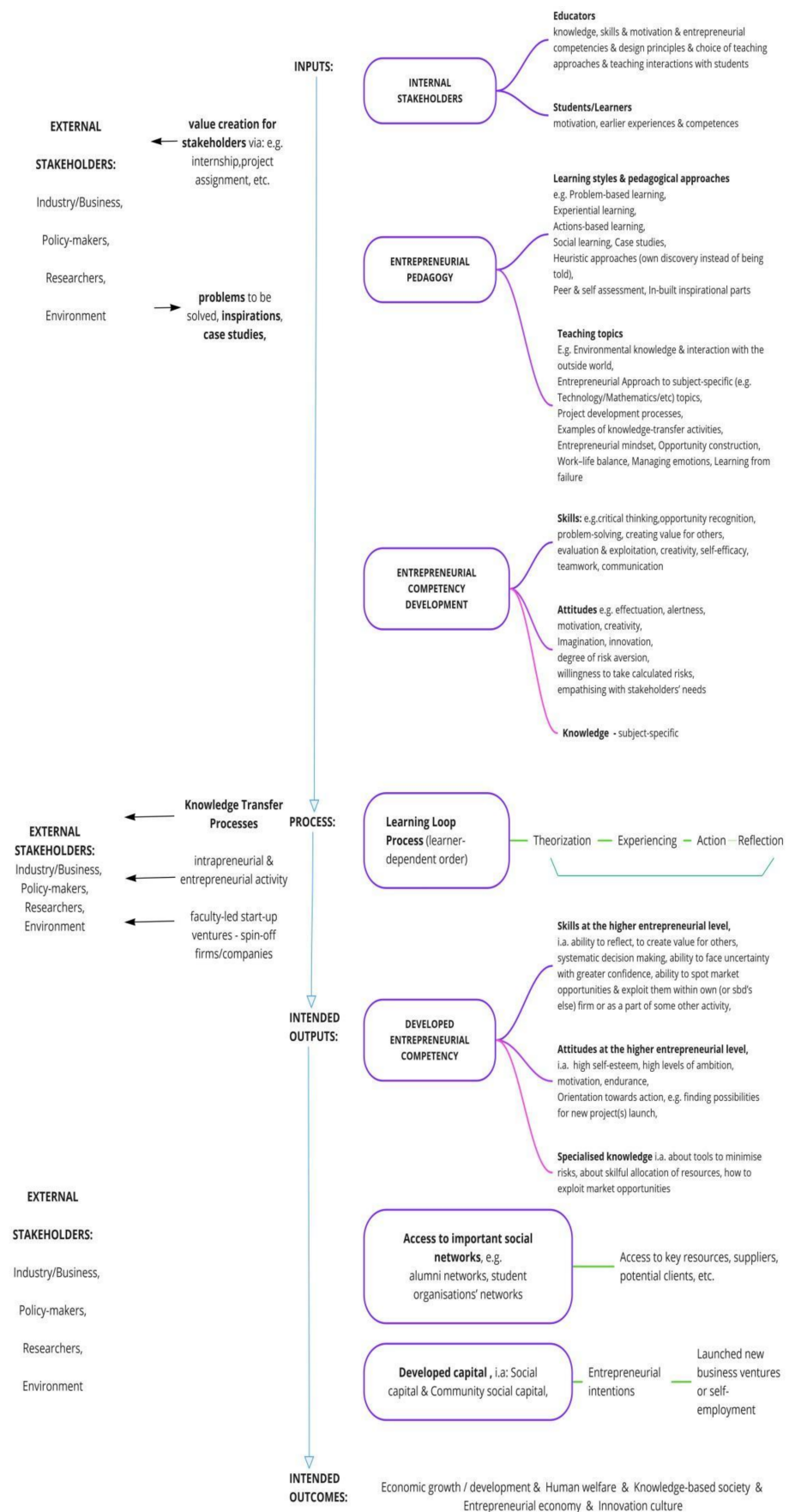


Figure 1. Progression Model for Entrepreneurial Higher Education.

The author draws on several concepts from experiential learning and action learning to provide descriptions of different learning activities undertaken in the course of the transformation of traditional education into entrepreneurship education.

The transformation of traditional education into entrepreneurship education can be connected to the experiential learning process for both the education system and its stakeholders. Experimentation encourages students to step outside assumptions taken for granted and requires them to enter an uncertain and ambiguous context. Uncertainty, as a feature of an educational program, replicates the circumstances in which an entrepreneur launches a business because starting a venture is an uncertain endeavor.

The iteration of the stages of an experiential learning process and their repetition as indicated by the theories of learning loop increases the educational efficiency of the whole process.

In the Model, the intended outcomes of entrepreneurial education have more general nature than the identified desired outputs and combine larger social, economic, and cultural aspects.

When it comes to future research directions, they might include:

- Research on the formation of an entrepreneurial mindset—motivation towards various types of entrepreneurship, e.g., social, green, etc.;
- Analysis of teaching topics, other than those mentioned in the Model, e.g., mission formulation with the social impact approach, social value creation, sustainable business model development, etc.;
- If any other methodical/pedagogical approaches increase the efficiency of entrepreneurial education and, consequently, whether they should be included in the pedagogical repertoire of educators;
- The impact of entrepreneur networks in strengthening social entrepreneurship; and
- Research on the development of a new educational model for social entrepreneurship supporting sustainable social change.

6. Conclusions

The author has summarized, organized, and adapted the research findings on entrepreneurial education modelling. The results are applied to the construction of the new progression model for entrepreneurial higher education (MEHE), with the intention to propose a conceptual and applicable tool for higher education policy making, management, and teaching for the development and introduction of entrepreneurial education as an operational perspective for the application of knowledge acquired in various higher education courses. The selection of the Model's key components was determined by methodology-based, targeted, and systematized literature review.

The answer to the question of how a model of an entrepreneurial education can be formulated to support a paradigm shift towards a more entrepreneurial university in order to prepare entrepreneurial graduates with appropriate competencies can be found in the construction of a new model representing a progression approach. Simultaneously, the progression model of EE was reassessed and defined from a renewed perspective, which stresses the relevance of the applied entrepreneurial education methods rather than formal educational levels.

The answer to the other research question of what would define the integral parts of MEHE was supported by the combination of the relevant entrepreneurial theories, system-based framework, and the analytical findings, which constitute the desired educational inputs, processes, outputs, and outcomes of the Model.

So far, the research on entrepreneurial education has separately examined the subject of entrepreneurship and the development of entrepreneurial competencies by higher education in general. Therefore, its EE modelling has been mainly linear. The Model outlined in this study combines the relevant research insights and maps out the relationships between the individual elements of EE in the new context of HE paradigm shifts towards a concept

of an entrepreneurial university by introducing an innovative approach into the research on EE modelling.

In the study, the need for the application of a broader novel perspective to the concept of the entrepreneurial university has been emphasized rather than the traditional one defined by the commercialization of research, knowledge transfer, or university–industry relations. The perspective provided by the triple helix model stressing the role of the stakeholders' system in the creation of innovation was found supportive for the inclusion of students and educators in their relational science-driven efforts in strengthening the university paradigm shift towards a more entrepreneurial university.

Consequently, the views offered by the quadruple and quintuple helix models emphasizing the role of society and the environment in the innovation systems enabled the inclusion of value creation into the Model.

The systematized literature review and comparative analysis undertaken in the paper has positioned research observations and conclusions in the context of entrepreneurial education modelling as an emerging field in the academic scholarship on entrepreneurship. Instead of applying entrepreneurship in the narrow sense e.g., by only a knowledge transfer between university and its external stakeholders, the Model could be used as a vehicle for broadening its scope by involving teaching activities in supporting students to become more entrepreneurial regardless of their specialization or subject of study. This could be a pragmatic way to make the entrepreneurial university concept more applicable, inclusive, and as a result, more beneficial for a broad range of stakeholders. The implementation of such an approach would indispensably call for collaboration between HE managers, educators, learning coaches, and entrepreneurship trainers.

6.1. Implications for Education

The presented model responds to the question of how to formulate educational programs to support the application of the entrepreneurial university concept in the broad sense, that is, by investing graduates with entrepreneurial competencies. The Model also establishes several important linkages that enable the development and introduction of entrepreneurial education as a mode of teaching that can be applied to most of the subjects of higher education.

The Model includes methods of learning that have received little attention or have been neglected in entrepreneurial education at higher levels, such as reflection [57] or inspiration. Implementation of these methods might be facilitated or bolstered by learning coaches or business mentors and include, for example, immerse learning journeys to varied locations and settings [58] to strengthen an educational effort in deep learning.

6.2. Implications for Theory

A key theoretical implication of this study is that scholars can use the key identified findings of the Model and of the comparative analysis of EE models to include (or improve) aspects of entrepreneurial approaches into the teaching of their subjects that require theoretical and practical development.

Advancing beyond the current state of entrepreneurial education modelling in the context of an entrepreneurial university concept could include the adoption of a more integrated approach by creating a comprehensive meta-method(s) supported by theory and examined empirically in a broad variety of contexts and situations.

On the theoretical level, the strengths of the constructed Model could be used to develop other educational models. Findings from this article can thus hopefully aid entrepreneurship scholars to improve their perspectives and can create new avenues for developing entrepreneurial education model(ing).

6.3. Implications for Practice

The Model offers a theoretical framework suggestion, the validity of which must be tested in practice. However, the practical implications of the Model are its capability to

support higher education institutions to adapt their educational offers across many subjects to the paradigm shift towards an entrepreneurial university. Consequently, scholars and managers of HEIs could reflect critically on the possibilities suggested in the paper and consider the suitability of the Model for their purposes.

Simultaneously, an advantage of the proposed model comes from its applicability as a set of guidelines for the development of new entrepreneurial education programs within academic courses. That supports the aim to build an entrepreneurial university in an extended form not only with more emphasis on knowledge transfer but also by incorporating appropriate entrepreneurial methodological approaches.

Another possible area of the practical application of this paper may be derived from the evaluation method offered by the Model for academic courses, as its general framework is adapted from the IPO approach, which was originally created for training evaluation purposes.

6.4. Implications for Policy

Policy makers could address the shortcomings identified in the comparative analysis of entrepreneurial education models in terms of educational inputs, processes, intended outputs, and outcomes demanding more practical relevance in teaching and scholarly activity in the course of the transition in higher education. Policy makers could encourage stakeholders (e.g., researchers, educators, managers of incubator and accelerator programs, learning coaches, university officials, entrepreneurship consultants) to raise the expectations about rigorous conceptual developments and at the same time, for contextual relevance and applicability.

6.5. Research Limitations

The research was supported by a systematized literature review covering forty-one articles. The range of those sources aimed to ensure their relevance and currency for the elaboration of the Model outlined for a more entrepreneurial university concept and practice. The reviewed articles were selected from various scientific journals incorporated simultaneously in the *Social Science Citation Index* and the *Entrepreneurship Journals Rankings* for that purpose and not intended to provide the basis for a comprehensive literature review.

The resulting Model represents the author's intention to formulate an applicable interpretive and analytical framework despite the inherent limitations of practice at the early phase of desirable transformation and adaptation of universities to the needs of more entrepreneurial higher education. The Model can certainly be adjusted and refined at a later stage depending on the availability of more data, observations from practice, and patterns of adaptive evolution of higher education institutions. In the light of more data and information, the future improvement of the Model may include the extension of some of its composite elements in the "input" and "output" dimensions. At the current phase of construction, the Model deliberately incorporated only those aspects that could be reliably based on available data and related analysis.

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