From Entrepreneurship to Pedagogical Entrepreneurship: An Educational Framework *

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Introduction

With the developments in the world, changing sectoral needs, social demands, new professions and business conditions bring innovation in education to the forefront. The reflections of innovation in the education sector bring innovations in new-generation schools and teacher qualifications. Today, entrepreneurship is among these innovations. Because economic development and inter-country development are associated with the existence of entrepreneurial societies. In entrepreneurship, it is essential to mobilize science, technology, and innovation to answer daily life problems and improve welfare (OECD, 2011). When different definitions of entrepreneurship are examined, common characteristics include problem-solving, innovation, productivity, product design and presentation (Yaman, 2023). Entrepreneurship, which requires turning new ideas into action in education, encompasses many skills such as risk-taking, creativity, innovative thinking, independent work, action planning, project management, goal setting, analyzing, value creation, designing, initiative and responsibility-taking, and collaborative work (Bikse & Riemere, 2013; European Commission, 2016, 2017; Morris & Kuratko, 2002). Therefore, today, entrepreneurship studies in various fields such as technology, health, agriculture, tourism, environment and education are coming to the forefront with their multidimensional competence area and interdisciplinary structure.

The trend towards entrepreneurship studies in the education field has increased significantly in recent years. It has been concluded that applied entrepreneurship trainings promote entrepreneurial learning, attitude, entrepreneurial skills and culture, and entrepreneurship intervention programs develop entrepreneurial intention and self-efficacy (Martínez-Gregorio, Badenes-Ribera, & Oliver, 2021). Therefore, entrepreneurial thinking skills should be developed at an early age. (Anderson et al., 2014). In this context, the Turkish Entrepreneurship Strategy and Action Plan (2015-2018) aims to "promote entrepreneurship in education, provide entrepreneurship education at all levels, and carry out entrepreneurship projects in schools". Similarly, to raise productive individuals equipped with entrepreneurship skills, entrepreneurship outcomes were included in the curricula of science, social sciences and science applications courses (MoNE, 2018, 2024), and an undergraduate course called "Economics and Entrepreneurship" was added to teacher training undergraduate programs (CoHE, 2018).

When examining entrepreneurship pedagogy, competencies that require skills to be used at the time of action come to the fore, unlike subject matter knowledge. The pedagogical content competencies models developed to date have identified the knowledge areas that teachers need for teaching content knowledge (Mthethwa-Kunene, Onwu, & de Villiers 2015; Rollnick et al., 2008). General pedagogical content knowledge (PCK) has been extensively examined in research focused on PCK (e.g., Gehrtz, Brantner, & Andrews 2022; Major & Palmer, 2002, 2006; Smith & Kanuka, 2018). In recent years, there has been growing interest in developing "subject-, concept-, method-, and skill-specific PCK" (Aydın Günbatar, 2019).

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The changing roles and needs of the new generation of individuals and society require innovation in the learning and teaching process and teacher competencies. In raising individuals who will adapt to changing learning environments and meet the needs of 21st-century individuals, teachers' professional and personal competencies must align with entrepreneurial knowledge and skills. As a complementary element of entrepreneurial teacher success and entrepreneurship ecosystem, entrepreneurial school climate is important from pedagogical environments (Uçar, 2020). Teachers, who are the pedagogical practitioners of entrepreneurship, and schools, where entrepreneurship culture is created, play a key role in the integration of entrepreneurship into education from an early age and the acquisition of entrepreneurial competencies. In this context, the pedagogy of entrepreneurship has recently come to the forefront as a new field of study. Therefore, in this chapter, we first examine the nature of entrepreneurship in different fields, then explain the importance of entrepreneurship education and models of entrepreneurship education, and then introduce entrepreneurial teacher competencies as active practitioners of education. Finally, we presented the structure, characteristics and types of skills covered by the concept of "pedagogical entrepreneurship (PE)", which emerged as a new product of the evolution of entrepreneurship in the pedagogical dimension. We also explored the challenges faced in applying pedagogical entrepreneurship in education and discussed what needs to be done to overcome these difficulties.

Entrepreneurship and Entrepreneurship Education

When the historical process relating to sustainable development is examined, entrepreneurship competence comes to the forefront with the definition of "entrepreneurship and initiative" terms among the competencies that the information society should have (EC, 2006). Similarly, the work of the Organization for Economic Cooperation and Development (OECD, 2018) has brought to the agenda the need to develop entrepreneurial competencies for economic development and social cohesion. In the 21st-century economy and business environment, new competencies such as digital literacy, business management, planning, and entrepreneurship need to be developed to cope with the current problems caused by globalization and the pandemic (Slišāne, 2021; Turulja et al., 2020). Current development plans, institutional strategic plans, action plans, and educational reforms developed to train manpower with these competencies required by the business world have contributed to the development of the pedagogical aspect of entrepreneurship.

The relationship between entrepreneurship and pedagogy is often described using terms such as "entrepreneurial learning, entrepreneurship education and entrepreneurship pedagogy" (Skolverket, 2015 as cited in Dal et al., 2016). The term entrepreneurship, which has its origin in the field of finance, is defined as "establishing new organizations" from the economic dimension (Gartner, 1989). In the educational dimension, entrepreneurship is the ability to put ideas into action (EC, 2016). According to the World Economic Forum, entrepreneurship is a process that encompasses innovation, creativity and sustainable development (WEF, 2009), while according to the European Commission, it is the ability to transform ideas involving innovation and creativity into practice and to initiate, plan and sustain a project (EC, 2008, 2012). The goal of providing individuals with these competencies has been the starting point for entrepreneurship education research.

Entrepreneurship education is the development of personal characteristics, attitudes and skills that underpin entrepreneurial thinking and behavior (EC, 2008, 2012). The entrepreneurial skills targeted by entrepreneurship education include "analytical, creative and innovative thinking, idea generation, research, planning, problem-solving, decision making, risk-taking, collaboration, communication, persuasion, tolerance of ambiguity, opportunity and value creation, financial and digital knowledge, proactivity, responsibility, leadership, and success motive" (Haara et al., 2016; Huber, Sloof, & Van Praag, 2012; OECD, 2018). The expectation from entrepreneurship education is to equip individuals with both economic value for their future lives and cognitive and

social skills within the framework of lifelong learning. (EC, 2008, 2012). In gaining these skills and competencies, the need to address the pedagogical structure of entrepreneurship comes to the fore. In this context, it is crucial to implement commercial, pedagogical, and social activities within the field of education that provide societal and individual benefits from economic, cultural, and social perspectives (Uçar, 2020). As a matter of fact, in the Entrepreneurship Strategy and Action Plan (2019), it is stated that entrepreneurial characteristics and competencies should be considered in teacher education and that it is important to invest in lifelong entrepreneurship education (p. 27, 48).

Entrepreneurship education aims to enable individuals to take action by using the necessary knowledge and skills to cope with problem situations (OECD, 2018). Moreover, it seeks to promote the adoption of entrepreneurship as a lifestyle (Uçar, 2020) and fosters the emergence of characteristics related to entrepreneurial potential (Heinonen & Poikkijoki, 2006). The dimensions of "creating a business idea, product design and production, financing, promotion and marketing, investment and sustainability" are emphasized as entrepreneurship-related elements of entrepreneurship education. The entrepreneurship skills and pedagogical competencies targeted to be developed in each dimension are combined in Table 1 (adapted from Deveci & Beşoluk, 2022; Tarhan, 2020).

Table 1. *Entrepreneurship and pedagogical skills targeted to be developed according to the dimensions of entrepreneurship education*

Entrepreneurship Dimensions	**Target Entrepreneurship Skills**	**Target Pedagogical Skills**
Creating a business idea	Expressing a business idea, forecasting, understanding the difference, designing a workplace, business planning	Creative thinking, innovative thinking, seeing opportunity, collaboration, problem solving
Financing	Awareness of financing support, cost calculation, needs, market and resource analysis	Resource management, risk-taking, locus of control
Product design and production	Product (brochure, logo, advert) design, determination of product quality, product production	Teamwork
Promotion and marketing	Creating a marketing plan, defining the market and product, product promotion, advertising design	Effective communication, self-confidence and self-efficacy
Investment and sustainability	Governance, networking	Problem-solving, futuristic thinking, determination, leadership

It is recommended to use various teaching methods and techniques such as mind intelligence games, modelling, interdisciplinary STEAM applications, digital story, project development, case studies, field trips, observation, drama, interviews with experts, experimentation, and argumentation to gain entrepreneurship competencies with the elements of entrepreneurship education (Selanik Ay & Acar, 2016; Tarhan, 2021). Furthermore, it is recommended to design activities based on real-world issues related to the topic, that is, to implement life-based learning (Uçar, 2020). The suggestions indicate that experiential and active pedagogical methods are widely used in entrepreneurship education (Hägg & Gabrielsson, 2020). Entrepreneurship education for the acquisition of entrepreneurial skills is based on three approaches (Haara & Jenssen, 2019; Kirby, 2003; Lackéus 2015):

i) Teaching about entrepreneurship: It aims to provide students with a general conceptual knowledge and understanding of entrepreneurs and entrepreneurship. This approach is suitable for secondary and university levels and is based on theoretical subject and content-based teaching.

ii) Teaching for entrepreneurship: Focuses on students' acquisition of basic skills and competencies (business plan, project preparation, etc.) related to entrepreneurship practices to train entrepreneurs. This approach, suitable for secondary and university levels, aims to provide vocational knowledge and skills.

iii) Teaching through/through entrepreneurship: It aims for students to create new ventures, such as starting a company, and to experience the entrepreneurial process behaviorally. This approach, which can be adapted for all levels of education, is a high-level, applied approach that encompasses both mentioned strategies. With this teaching approach, both the discipline-specific subject area is learned, and entrepreneurial skills are developed with the practical dimension. Entrepreneurship skills are acquired through on-the-job practices, that is, by doing and experiencing.

In terms of level, teaching about entrepreneurship is at the cognitive level, teaching for entrepreneurship is at the skill level, and teaching through entrepreneurship is at the behavioral level. When entrepreneurship education models are examined in the literature, the purpose and dimensions emphasized by each model (Bal İncebacak, 2022, p. 46, 54) are given in Table 2.

Table 2. *Entrepreneurship education models*

Model Name	**Dimensions of the Model**	**Purpose of Entrepreneurship Education in the Model**
Progression Model (Rasmussen & Nybye, 2013)	1-Action (start-up, communication, value creation, collaboration) 2-Creativity (idea-opportunity, applied knowledge, solution) 3-Attitude (self-confidence, dealing with uncertainty, accepting failure, ethical principles) 4-Environment (culture, conditions, market, economy)	Finding new solutions by applying knowledge as a team, experimenting with ideas and transforming them into applications that create value in society, developing creativity, creating initiatives
Entrepreneurship and Education Integration Model (Paloniemi & Belt, 2017)	1-Entrepreneurship Skills (opportunity creation, business design, modelling, planning) 2-Entrepreneurship Training (creating opportunities, learning and teaching) 3-Training Process (structuring learning and teaching: social constructivism)	Making practical applications, creating ideas, opportunities and value

Based on different definitions and approaches of entrepreneurship, it is understood that the dimensions focused on "idea creation, opportunity creation, value creation and venture creation" come to the fore in educational models (Lackeus, 2020). It is important to provide entrepreneurship education in all its dimensions in the early stage. According to Erikson's Psychosocial Development Theory (1968), he stated the "guilt phase against entrepreneurship" (3-6 years) is the third period. In this stage, he explains that entrepreneurial characteristics emerge in individuals at an early age before reaching school age. Therefore, it is necessary to create active, flexible, interactive,

democratic, social, motivating, collaborative, inspiring and multidimensional entrepreneurial learning environments to foster the development of these entrepreneurial characteristics (Gibb, 2005; Löbler, 2006). It is important to organize these environments in a way that encourages entrepreneurial behaviors, entrepreneurial ideas, collaborative work, student success, and students to take authority and responsibility (Yaman, 2023). Learning environments with these qualities will encourage entrepreneurial learning.

The term entrepreneurial learning is associated with the learning process and learning styles in an entrepreneurial context. It is based on knowledge (know-what), skills (know-how) and connections/networks (know-who). In other words, entrepreneurial learning focuses on knowledge accumulation, experience, developing new knowledge, and formal and informal networking. In this framework, entrepreneurial learning occurs during the process of understanding and changing the environment, starting and managing new ventures through social interaction, discovering and evaluating opportunities, taking action, and transforming experiences into action. Due to its social and individual nature, entrepreneurial learning involves "individual and collective learning, exploratory and utilitarian learning, intuitive and perceptual learning", and it requires the integration and interaction of these three types of learning. This is because these types of learning help in the entrepreneurial process of generating and implementing new ideas and understanding how entrepreneurs discover and develop opportunities (Wang & Chugh, 2014). The characteristics of entrepreneurship education for entrepreneurial learning include facilitating learning, learning by doing, teamwork and problem-solving (Garnett, 2013).

Entrepreneurial thinking skills are as important as entrepreneurial learning. Raising entrepreneurial thinkers with entrepreneurial intentions, attitudes, cognitive structures and deep belief systems about a subject requires special expertise (Kruger, 2007). From this point of view, **entrepreneurial teachers** play a key role in the implementation of entrepreneurship education models, the design of entrepreneurial learning environments and the dissemination of entrepreneurial learning, entrepreneurial thinking skills, entrepreneurial mindset and culture (Deveci, 2016; EC, 2014; Slišāne, 2021).

Entrepreneurial Teacher Competencies

The terms "entrepreneurial teachers" and "teacher entrepreneurs" are used in the educational context to understand the implications of entrepreneurial behavior in teaching methods. These terms refer to teachers who exhibit entrepreneurial characteristics in the teaching process (Slišāne, 2021). There are three perspectives in literature on teacher entrepreneurship. The first one is entrepreneurship education and pedagogy, which aims to develop entrepreneurial skills in students. The second perspective, entrepreneurship, business development and establishment, focuses on commercial and economic activities, such as teachers starting an enterprise and a business. Finally, the entrepreneurial competencies and behaviors perspective reflects teachers who transform their entrepreneurial competencies into behaviors and actions (Keyhani & Kim, 2021). In this framework, entrepreneurial teachers have characteristics such as "knowledgeable, dedicated, innovative, collaborative, responsible, opportunity-oriented, risk-tolerant, proactive, social, self-developing, motivated, committed, decisive, leader, visionary" (Keyhani & Kim, 2021; Slišāne & Hyytenen, 2023).

The literature emphasizes that entrepreneurial teacher competencies and entrepreneurship education should differ from traditional approaches and understanding. Entrepreneurial teachers are defined as both people who develop entrepreneurial skills in their students (Peltonen, 2015) and entrepreneurs who bring an entrepreneurial mindset to their students (Heinonen & Poikkijoki, 2006). Whether they start a business or not, teachers with entrepreneurial knowledge and characteristics become role models in the process of developing entrepreneurial behavior in their students. The characteristics of an entrepreneurial teacher for students include *encouraging student*

participation, communicating well with them, motivating them, using different methodologies, and being flexible (San-Martín et al., 2021). In addition, entrepreneurial teachers demonstrate entrepreneurial behaviors that enhance their professional performance and improve students' learning. These entrepreneurial behaviors of teachers include *seeing opportunities, following innovative practices, researching new developments and studies in the field of education, motivating students to think critically and creatively, developing technology-based projects inside and outside the classroom, adapting teaching materials to changing situations, and seeking the necessary resources for this* (Khorrami, Farhadian, & Abbasi, 2018, Neto, Rodrigues, & Panzer, 2017 as cited in Slišāne, 2021). Therefore, entrepreneurial teachers encourage their students to set goals, take responsibility, plan, search for different solutions and find answers, self-regulate, self-evaluate, act independently, etc., allow them to take risks, learn from their mistakes, develop and apply different perspectives, facilitate learning through individual and collaborative experiences, and enrich learning with developing new teaching methods and original activities (Garnett, 2013; Seikkula et al., 2015; Slišāne, 2021). At the same time, the entrepreneurial teacher, who has characteristics such as leadership, open-mindedness and high persuasiveness, establishes effective communication networks with students, teachers, parents and other educational stakeholders, and looks for ways to involve different sectors in entrepreneurship education (EC, 2011, 2014).

With entrepreneurial characteristics such as cognitive (*presenting a business idea, defining concepts related to entrepreneurship, etc.*) and non-cognitive (*creativity, innovation, risk-taking, seeing opportunities, teamwork, determination, etc*.) (Deveci, 2021; Deveci & Beşoluk, 2022), the teacher needs to effectively implement entrepreneurship education by integrating it into the lesson and subject to develop entrepreneurial knowledge and skills in their students. For this, an entrepreneurial teacher needs to possess pedagogical field competence specific to entrepreneurship skills across the dimensions of "goal, student, program, strategy and evaluation". In this context, the "**pedagogical entrepreneurship**" approach comes to the fore as a way of conceptualizing entrepreneurship pedagogy in the gaining and evaluating entrepreneurship skills in educational institutions.

Pedagogical Entrepreneurship

Changing educational reforms bring changes in the teacher education system to train qualified and competent teachers who can adapt to technological development and labour market demands. School reforms require teachers to design an effective learning process that enables students to acquire entrepreneurial skills. The process related to these learning practices is still unclear and brings up the new concept of pedagogical entrepreneurship (Dal et al., 2016; Slišāne, 2021). The concept of "pedagogical entrepreneurship" is used to describe the integration of entrepreneurship into the educational process (Haara et al., 2016). Pedagogical entrepreneurship combines the field of pedagogy and the discipline of entrepreneurship. Pedagogical entrepreneurship is a necessary tool for student development with action-oriented, authentic learning and self-regulation abilities that are not only related to economics or business (Haara & Jenssen, 2016).

Pedagogical entrepreneurship is an approach to teaching and learning that focuses on opportunities and possibilities in the classroom, with a focus on discovery and innovation, based on a lifelong learning perspective (Haara & Jenssen, 2019). The concept of pedagogical entrepreneurship is defined narrowly and broadly in different countries. From a narrow perspective, pedagogical entrepreneurship is applied more business-oriented in secondary education, while in a broad sense, the concept is used to promote creativity in primary school education. In these perspectives, the focus is on fostering innovation and creativity in the early years of school, whereas the implementation of creative entrepreneurial ideas through educational activities related to economics and business at upper secondary level (Dal et al., 2016).

From an educational perspective, pedagogical entrepreneurship is the realization of entrepreneurship education from a teacher or pedagogue perspective (Leffler, 2009; Riese, 2011; Svedberg, 2010). At the same time, pedagogical entrepreneurship is an incentive tool that helps the successful implementation of individual and organizational goals in the teaching profession (Slišāne, 2023). Namely, pedagogical entrepreneurship is about how teachers can use their entrepreneurial competencies in managing classroom and out-of-school practices. Therefore, teacher and pedagogical approaches play a key role in developing students' entrepreneurial competencies. Pedagogical entrepreneurship is carried out by entrepreneurial teachers who are innovative and flexible thinkers, recognize problems, set strategic goals, collaborate with school and community, work in teams, take initiative, identify and evaluate opportunities, use resources efficiently, take financial responsibility, are socially motivated, risk-takers, persistent and determined, creative and leaders. Moreover, to develop entrepreneurial competencies, it is important that students actively participate in the learning process (Toutain & Fayolle, 2017; Slišāne, 2021, 2023; Slišāne & Rubene, 2021). Therefore, pedagogical entrepreneurship aims to help students develop an entrepreneurial mindset capable of making independent decisions through a more innovative and creative learning process rather than starting a business (Dal et al., 2016; Riese, 2010). In this context, pedagogical entrepreneurship is often associated with 'creativity and innovation' terms. In this perception, the pedagogical entrepreneurship concept is a definition that includes competencies related to creativity, innovation, planning research/work, problem-solving, and working in a team (Sjøvoll, 2011, Skolverket 2015 as cited in Dal et al., 2016). The components that determine the conceptual framework of pedagogical entrepreneurship are as in Table 3 (Slišāne, 2023, p. 2858)

Table 3. *Conceptual framework of pedagogical entrepreneurship (PE)*

Conceptual Components	**Personal skills**	**Social skills**
Leadership	Flexibility	Effective communication Using resources
Professional autonomy	Pedagogical activity knowledge Professional reflection Professional determination	-
Proactivity	Strategic vision Risk-taking	-
Problem-solving	-	Social innovation Creating added value

Pedagogical entrepreneurship is an important approach to improving teaching methods that focuses on developing these characteristics and qualities (Dal et al., 2016). One of the factors affecting the development of pedagogical entrepreneurship is the use of methodology and the provision of an educational environment that supports skills. For this, making the educational process more relevant to daily life, transferring experience to different situations, action-based educational processes are recommended. Examples of these educational processes include creating problem-solving focused performance tasks, assigning interdisciplinary projects, encouraging collaborative work environments, developing role-play/drama or simulation applications, taking different learning styles into account, internship applications in the field of education, and using an innovative approach that supports entrepreneurship and pedagogical entrepreneurship. Curricula need to be aligned with the skills of teachers with pedagogical entrepreneurship competencies to effectively use these educational practices and help students achieve skill acquisition (Slišāne, 2023). Pedagogical entrepreneurship, in this regard, focuses on ensuring the applicability of the curriculum in schools through workshops that foster creative learning environments (Dal et al., 2016). From here, it is understood that "entrepreneurial curriculum, innovative and creative learning

environment, entrepreneurial teacher and student roles" are among the important dimensions of pedagogical entrepreneurship (Koç Erdamar & Görkaş Kayabaşı, 2022).

Educational policies and research from different countries such as Finland and Norway emphasize that the pedagogical entrepreneurship approach should be applied in every subject. Moreover, pedagogical entrepreneurship should be present in teacher education programs at the theoretical and practical levels. Thus, after graduation, teachers in practice are expected to act as change agents. Because pedagogical entrepreneurship prioritizes the implementation of research-based, action and problem-oriented real-life situations. Students understand the complex nature of everyday life problems, explore new possibilities, research to create value in society and experience the process by reflecting on their teaching practices with this approach (Haara & Jenssen, 2019; Haara et al., 2016). In general, when the definitions of pedagogical entrepreneurship are examined, the areas of emphasis and focus of this concept are action-based teaching, active-creative-entrepreneurial and authentic learning, self-regulation ability, action and value creation competence, problem-solving and interaction with society (Haara & Jenssen, 2019; Lackeus, 2016).

Challenges encountered in implementing pedagogical entrepreneurship in education include the dominance of the economic aspect of entrepreneurship, teachers' uncertainty in the processes of assessing entrepreneurial learning and implementing entrepreneurial methods, lack of a common understanding of the concept of pedagogical entrepreneurship, the limited use of pedagogical entrepreneurship in school courses and curricula, lack of knowledge and skills in school leaders and teachers to implement this approach, and incompatibilities between practice and educational policy. To overcome these challenges, it is recommended that pedagogical entrepreneurship be integrated into teacher training programs, focusing on developing a learning approach that transforms competencies into action through entrepreneurship, rather than simply teaching knowledge about entrepreneurship (Haara & Jenssen, 2019). From this point of view, it is extremely important to simplify the conceptual framework of pedagogical entrepreneurship, to structure an educational model appropriate to the nature of pedagogical entrepreneurship, to integrate the model with teacher training programs, to plan active learning and teaching practices for pedagogical entrepreneurship-oriented science teaching, to develop activity guides in this framework, to enrich the activities with daily life practices, and to prepare new measurement tools to evaluate pedagogical entrepreneurship approach and competency areas.

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