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Research Article

Integration of design and entrepreneurship: a proposal for innovative educational models

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Abstract

This study examines the integration of design and entrepreneurship education, highlighting its role in enhancing creativity, fostering innovation, and bridging academic learning with real-world application. Design education focuses on user-centered approaches, aesthetics, and functionality, while entrepreneurship translates creative solutions into market-ready outcomes. The study showcases how merging these disciplines prepares students for leadership roles and equips them to address socio-economic challenges. Based on a doctoral dissertation, the research presents the "Design and Entrepreneurship" course, implemented for three years at Istanbul Yeni Yüzyıl University's Fine Arts Faculty Graphic Design Department. The 16-week curriculum develops entrepreneurial skills such as problem identification, business model creation, SWOT analysis, customer profiling, and moodboard preparation, all integrated with design principles. The model emphasizes iterative processes like prototyping, testing, and feedback. Using a case study approach, data from surveys, chronological records, and classroom observations were analyzed. The results indicate that this interdisciplinary approach enhances creative and entrepreneurial competencies, fostering innovative, market-oriented solutions. Applied learning environments proved effective in promoting collaboration and equipping students with practical industry skills. The study underscores the importance of integrating entrepreneurship into design curricula to meet industry demands, enabling students to merge creativity with business acumen. It advocates for adapting this model across various art and design disciplines, fostering innovation and bridging gaps between theory and practice. The model's three-year sustainability demonstrates its scalability for professional success. In summary, integrating design and entrepreneurship education offers a transformative framework that prepares students to address both creative and socio-economic challenges, providing a solid foundation for interdisciplinary curriculum development.

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Introduction

Design and entrepreneurship are two fundamental disciplines that enable the transformation of creative ideas into economic and social value. While design provides problem-solving and innovation-oriented approaches, entrepreneurship focuses on implementing these ideas and creating sustainable value. The integration of these disciplines into higher education curricula ensures the development of qualified individuals who can meet the evolving demands of creative industries.

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This study examines the integration of design and entrepreneurship education within the framework of the Triple-Helix Model. To foster entrepreneurship and project development, the traditional Entrepreneurial University concept, which initially emphasized university-industry collaboration, has been expanded with the inclusion of the government sector, introducing a new model to the literature known as the Triple-Helix Model. This model represents the collaboration and integration between universities, the government, and industry. In this model, universities provide knowledge and technological advancements, governments offer legal and financial support, and industries define and implement market demands. By fostering synergy among these three pillars, the model supports innovation and entrepreneurship by facilitating the efficient execution of collaborative initiatives.

According to Henry Etzkowitz, "*The university-industry-government relationship consists of overlapping institutional spheres that assume each other's roles while remaining relatively independent yet interdependent*" (Etzkowitz, 2002:2). By incorporating the university into the public-private relationship, this structure adds academic value, supporting the transition from an industrial society to a knowledge society. As Kiper notes, "*Unlike the linear innovation model, this structure represents institutional relations focused on innovation among the public, private sector, and academia, organizing these relations at different levels and explaining the use of knowledge as capital within a triple-helix structure*" (Kiper, 2010:31).

The Triple-Helix Model provides a robust framework for teaching design and entrepreneurship simultaneously. However, current curricula often treat these fields separately, particularly in arts and design programs, where entrepreneurship education is insufficiently integrated. This separation prevents students from acquiring the entrepreneurial competencies necessary to bring their creative ideas to market and develop sustainable projects.

The primary objective of this research is to introduce and evaluate an innovative curriculum model that combines design and entrepreneurship. The study presents a practical framework for incorporating entrepreneurial strategies into design education to support students in developing more analytical and sustainable solutions during their project production processes. The proposed model, which is exemplified through the "Design and Entrepreneurship" course conducted for three years at Istanbul Yeni Yüzyıl University, demonstrates how the integration of these disciplines equips students with competencies such as problem identification, business model development, SWOT analysis, and customer profiling.

The significance of this research lies in its contribution to both academic theory and practical application. It addresses a crucial gap in the existing literature by proposing an interdisciplinary approach that aligns with real-world needs and challenges. By embedding entrepreneurial thinking into design education, the proposed model enhances students' problem-solving abilities and prepares them for leadership roles in creative industries. In this context, Balaban and Özdemir (2008) emphasize the role of education in fostering entrepreneurship as follows: "*Entrepreneurship is one of the fundamental factors that emerge during the transition from an industrial society to a knowledge society and determines economic development. For a country to achieve growth and progress, it must foster entrepreneurs who can create economic value and adapt to rapidly changing conditions. In this context, education is considered one of the most critical factors in uncovering entrepreneurial potential. The purpose of entrepreneurship education is to help individuals discover and become aware of their latent entrepreneurial characteristics*." (Balaban & Özdemir, 2008:133).

Therefore, the integration of design and entrepreneurship aims not only to train designers capable of creating aesthetically pleasing and functional solutions but also to cultivate individuals who can generate social and economic value. By encouraging interdisciplinary collaboration and applied learning, this study aims to provide a roadmap for fostering innovation and entrepreneurship in creative industries through academic programs.

In summary, this study highlights the importance of interdisciplinary collaboration by examining the relationship between design and entrepreneurship within the context of the Triple-Helix Model. The proposed educational model underscores the necessity of equipping students with both creative and entrepreneurial competencies, enabling them to excel in design projects and emerge as leaders in the competitive landscape of the business world.

Research Problem

Design and entrepreneurship education are often treated as separate disciplines and conducted within independent curricula. This situation creates a gap between creative thinking skills and the capacity to develop innovative solutions applicable in the business world. Individuals aiming to work in creative industries are expected to possess both design-oriented problem-solving abilities and the capability to commercialize these solutions. However, current educational models do not sufficiently support the simultaneous development of these two competencies. As a result, curricula that do not integrate design and entrepreneurship limit students' capacity to succeed in the business world and create innovative products. This study arises from the need to develop a model that addresses this deficiency.

Method

Research Model

The research was designed to evaluate the effectiveness of the proposed "Design and Entrepreneurship" course in developing students' creative and entrepreneurial competencies. The course was implemented over three years and analyzed through surveys, classroom observations, and chronological records.The research is structured around a case study model to provide an in-depth exploration of the interdisciplinary curriculum. Case studies are particularly effective in capturing detailed insights into educational interventions and their impact, making this approach suitable for assessing the application and outcomes of the course.

Participants

The participants of this study included fourth-year undergraduate students enrolled in the "Design and Entrepreneurship" course at Istanbul Yeni Yüzyıl University's Department of Graphic Design. Over the three-year implementation period, a total of 120 students participated. The participants were selected as they represented a relevant cohort actively engaging in creative problem-solving and entrepreneurship within their academic studies.

Relevant course documents, such as syllabi, lesson plans, and student project submissions, were also analyzed to support the study. Additionally, feedback from students in the form of surveys and presentations served as critical data sources.

Data Collection Tools

Pre-course and post-course surveys were administered to measure students' perceptions of their entrepreneurial skills and creative competencies. Detailed observational notes were taken during each course session to monitor students' engagement and participation in course activities. Records of student progress throughout the 16-week course were maintained to document milestones, challenges, and accomplishments during the project development process.

Data Analysis

Data collected from surveys were analyzed using descriptive analysis to identify trends and changes in student responses. Quantitative data were tabulated and interpreted to highlight any improvements in students' entrepreneurial knowledge and skills.

Qualitative data from classroom observations and student submissions were subjected to content analysis. Thematic coding was used to identify recurring themes, such as problem identification, creativity in solutions, and proficiency in developing business models. The integration of qualitative and quantitative findings provided a comprehensive understanding of the course's impact.

Procedure

The process of this study is based on Dr. Duygu Sezgin's doctoral dissertation titled "Design Entrepreneurship in Turkey: A Proposed Design Technopark Model for Implementation at Mimar Sinan Fine Arts University" and the GRA 412 Design and Entrepreneurship course, which has been conducted with senior-year graphic design students for three years. The course is structured as a 16-week program designed to equip students with entrepreneurial skills by integrating design-oriented problem-solving processes with business development strategies.

The first phase of the 16-week course begins with an introduction to entrepreneurship concepts and encourages students to identify a problem related to their field of study and develop innovative solutions for it. Throughout the

semester, students work on essential components such as business model canvases, SWOT analyses, and customer profiling. The midterm assessment evaluates their progress based on the submission of these components.

After the midterm, topics such as social entrepreneurship, revenue models, investor preparation, and branding strategies are covered. The final weeks are dedicated to project completion and presentation rehearsals. The semester concludes with a final exam, during which students present their projects in a jury format simulating an investor pitch. This comprehensive process ensures that students gain both theoretical knowledge and practical experience in entrepreneurship.

Ethics

This study was conducted in accordance with ethical principles to ensure the integrity and transparency of the research process. Participation was based on voluntary consent, and students were thoroughly informed throughout all stages of the research. During the data collection and analysis phases, students' anonymity and confidentiality were strictly maintained, and the collected data were used solely for academic purposes. No personal or sensitive data that could identify participants were collected, and the intellectual property rights of student projects were protected. All feedback was provided objectively and constructively. The research process was carried out with respect for participants' rights and within a transparent and supportive environment.

Findings

Design and Entrepreneurship: Conceptual Connections

In this section, the concepts of design and entrepreneurship are defined under specific subheadings, focusing on their foundational elements. These subheadings include the definitions of design and entrepreneurship, providing a clear understanding of each concept. Additionally, the educational processes related to both fields are discussed in detail under their respective subtopics.

Furthermore, the section highlights the parallel aspects of design and entrepreneurship in a dedicated subheading, emphasizing their interconnectedness. The similarities between the two are explored to demonstrate how they complement and enhance each other.

The Concept of Design

Design is an interdisciplinary field that combines creativity and problem-solving skills to provide user-centered solutions. Since the Industrial Revolution, design has evolved from craftsmanship to an industrial approach and has come to play a fundamental role in today's creative industries. Kalay defines design as follows: *"Design is a process aimed at developing artificial objects or environments that meet specific goals within certain constraints. Since there is no formula that can consistently translate goals and constraints into coherent physical forms, design relies heavily on knowledge and experience, following an iterative trial-and-error process"* (Kalay, 1985, p. 320). Emre Becer (Becer, 1997) categorizes the steps to be followed in the design process as: *"problem definition, information gathering, creativity and invention process, solution finding, and implementation"* (p. 39).

The British Design Council, established in 1944, supports designs that aim to improve lives and emphasizes the importance of creating sensitive and sustainable designs. According to the council, the published double-diamond model and its main components are considered to best encapsulate the design process (British Design Council, 2004).

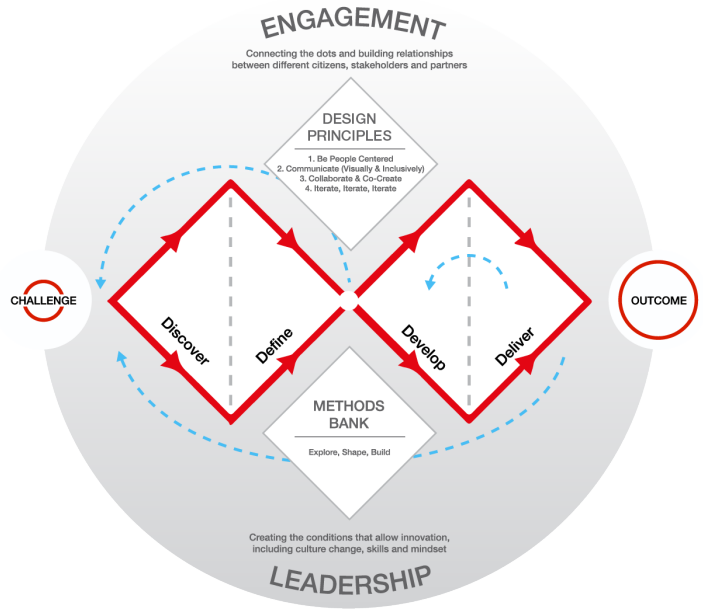

Figure 1. The Double Diamond model, developed by the Design Council (British Design Council, 2004)

According to the council, this process begins with an impetus or a challenge and progresses through various stages to reach completion. These stages are represented in a double-diamond model, consisting of four sections: Discover, Define, Develop, and Deliver. The explanations of these four stages are as follows:

Stage 1. Discover: This is the initial phase in which the designer understands and explores the problem, marking the start of the design process. In the case of an original design, this stage may involve personal exploration, whereas in commissioned design, it progresses based on the provided brief.

Stage 2. Define: In this phase, the designer identifies and defines the problem and works on crafting a solution. At this point, it can be said that the abstract realm of design begins to take tangible form.

Stage 3. Develop: This stage involves the generation of solutions, development of prototypes, testing of the product, or interaction of the design with the audience or user. Feedback gathered during this phase and the updates made based on this feedback are crucial for the success and sustainability of the design.

Stage 4. Deliver: This is the final stage where the design is completed, introduced to the end user, exhibited, or launched in the market (British Design Council, 2004).

Although the final stage is "Deliver," design is an ongoing process. The blue arrow pointing left between "Deliver" and "Develop" in the diagram illustrates this concept. Even a delivered and marketed design, despite being tested, may receive negative feedback from end users. In such cases, revisions can be made by returning to the "Develop" stage. A similar situation applies when implementing an entrepreneurial project.

Throughout these four stages, design principles are utilized. These principles prioritize the target audience-humans-emphasize collaborative production, and advocate for iterative revisions based on feedback to meet needs in the most accurate way possible. According to the council members, the principles a designer should adhere to are explained as follows:

Human-centered approach: Begin by understanding the people using a service, their needs, strengths, and desires.

Visual and inclusive communication: Help people gain a shared understanding of problems and ideas.

Co-creation: Collaborate and progress by drawing inspiration from the work of others.

Iteration: Identify errors early, mitigate risks, build confidence in your ideas, and repeat the process (British Design Council, 2004).

The methods to be applied in the design creation process are grouped under the "Method Bank" by the council, recommending the "Discover, Shape, and Build" approaches. Based on this diagram, the views of the council, and other definitions, the concept of design can be summarized as follows: “Design is a continuous, iterative process aimed at

solving the problems of the target audience in line with certain principles." Within this context, it is crucial to instill this perspective in design education.

Design Education

The period spanning from the late 1700s to the mid-1800s marked the advent of industrialization, with machinery increasingly entering daily life and ushering in the Industrial Revolution. This era caused a significant transformation in many fields, including classical art and the once-valued original handcrafted designs. Handicrafts and artisanal works lost their importance, giving way to mass-produced goods and initiating an era of serial production. Consequently, the value and pricing of art and design products shifted, leading to a systemic reevaluation.

The meaning of art and design began to change, prompting systematic inquiry. The Arts and Crafts movement, which emerged in the mid-1800s, reinstated the importance of craftsmanship and original design. This led to a reassessment of design education, followed by the establishment of fine arts schools in England. Originating in England, this movement eventually gained traction worldwide under various names. The Arts and Crafts movement, supported by The Studio magazine—a significant publication promoting international trends—had a profound influence on European art movements. While it was known as Arts and Crafts in England and America, it was referred to as Art Nouveau in France and Belgium, Jugendstil or Neue Kunst in Germany, Secessionstil in Austria, and Stil Floreale in Italy, all serving a common purpose.

The introduction of art and design as formal subjects in school curricula is closely tied to the Industrial Revolution, laying the foundation for integrating design production and education with industry. The Arts and Crafts movement, which originated as a distinctive style opposing industrialization, underwent a transformation with the establishment of the Bauhaus School in Germany in 1919. The Bauhaus introduced a new understanding that viewed machines as tools that could be utilized in artistic production. It is fair to assert that Bauhaus significantly influenced art education globally.

With advancements in technology and the invention of computers, traditional methods were augmented by digital techniques, fostering interdisciplinary studies. Alongside art and design schools, various universities established faculties dedicated to fields such as graphic design, industrial design, interior architecture, and stage-scenography design. These departments began offering specialized courses tailored to their respective disciplines. While this specialized focus is undoubtedly valuable, the purpose of this article is to propose an innovative model that incorporates entrepreneurship into design education and to emphasize the necessity of integrating the concept of entrepreneurship into design curricula.

Design education, unlike fields such as science and mathematics, lacks widespread standardization. However, the 2011 ICOGRADA[2] Design Education Manifesto established certain frameworks for this purpose. The manifesto, comprising contributions from various designers and educators, features a section titled "The Future of Design Education," which outlines nine key principles. Three of these principles are as follows:

Principle 3: Design education should present models for cross-cultural and interdisciplinary communication and global market collaboration between industries, users, other design disciplines, and stakeholders.

Principle 6: It should contribute new knowledge to interdisciplinary discourse and inspire professional practices.

Principle 9: It should instill personal responsibility in students regarding the environmental and societal impacts of their work (Icograda, 2012).

These principles advocating for the future of design education emphasize the importance of cross-cultural and interdisciplinary collaboration while asserting that projects should play a role in identifying and solving environmental issues.

2 ICOGRADA: The International Council of Graphic Design Associations

The Concept of Entrepreneurship

Entrepreneurship can be defined as the process of transforming innovative ideas into economic or social value. This process emphasizes risk-taking, problem-solving, and sustainability. Entrepreneurship combines individual creativity with team collaboration to generate innovative solutions.

"The concept of entrepreneurship, in its current sense, is associated with the dominance of the capitalist mode of production. Its entry into economic literature also dates back to the 19th and 20th centuries. The term was introduced into economics by the French economist Cantillon" (Blinks & Vale, 1990: 119).

The table below presents definitions of entrepreneurship and entrepreneurs by researchers and practitioners who have studied and contributed to this field. By analyzing the commonalities among these quotations, the aim is to provide a comprehensive definition of entrepreneurship and the qualities of an entrepreneur.

Table 1. Chronological definitions of entrepreneurship and the entrepreneurial individual based on expert opinions

Name	Profession/Title	Year	Definition/Quotation
Richard Cantillon	Economist, Writer	1755	An entrepreneur is someone who buys or produces the inputs of production to sell them at an uncertain price. According to Cantillon, the main characteristic of entrepreneurs is living with an uncertain income (Cantillon, 1990).
J. Babtiste Say	Economist, Entrepreneur, Philosopher	1845	The concept of an entrepreneur is a person who brings together all factors of production to produce a good that is considered valuable and takes on the risk for the profit they will earn. Say's definition of an entrepreneur is based on having both the ability to take risks and managerial skills (Blinks & Vale, 1990).
Joseph Alois Schumpeter	Economist, Austrian Finance Minister (1919–1919)	1976	Entrepreneurship is one of the most important elements of the economy. The entrepreneur's main responsibility is to increase the welfare of society by introducing innovations in various types (Schumpeter, 1976).
Howard H. Stevenson D. E. Gumbert	Rock Baker Foundation Honorary Professor, Harvard University Economist, Writer	1985	The explanation of entrepreneurship involves stating that it is a characteristic present in some organizations or individuals, and absent in others; in other words, it is an all-or-nothing trait. This trait manifests itself in advancing the individual or business or seeking security (Stevenson & Gumbert, 1985).
Prof. Dr. A. Emre Demirci Assoc. Prof. Dr. Mehmet Başar Dr. Lecturer Burak Tuğberk Tosunoğlu	Academic, Anadolu University, Academic, Anadolu University	2001	Behaviorally, the concept of entrepreneurship can be defined as the set of activities necessary to seize an opportunity, define a business idea, find the necessary resources, launch the initiative, and achieve results. There are four main components of entrepreneurial thinking: being innovative and creative, risk-taking, being a pioneer, and thinking competitively (Başar, Tosunoğlu, & Demirci, 2001).
Prof. Dr. Murat Yalçıntaş	Academic, Former President of the Istanbul Chamber of Commerce	2010	Entrepreneurship is a dynamic process that includes vision, change, and creativity. It requires passion and energy, and the application of this energy is necessary to create and implement new ideas and constructive solutions (Yalçıntaş, 2010).
Prof. Dr. Engin Özgül	Academic, Department of Business Administration, Faculty of Economics and Administrative Sciences, Dokuz Eylül University	2019	To define a good entrepreneur in the shortest way, it is possible to say that it is a person who creates value for the stakeholders of the initiative by gathering the resources needed to produce a product or service in the way that creates the highest value. Therefore, the entrepreneur's most important responsibility in making the business successful is innovation (Özgül, 2019).
Nazım Salur	Entrepreneur, Founder of Getir and Bitaksi	2021	An entrepreneur is someone who generates a business idea from a situation that everyone complains about (Salur, 2021).

In the table 1, certain words are underlined to emphasize key concepts. Drawing from these emphasized terms and the entirety of the quotations, the essential characteristics of an entrepreneur can be summarized as follows:

- Productive and creative
- Able to cope with uncertainty
- Willing to take risks
- Possessing developed leadership and pioneering skills
- Adept at seizing opportunities
- Passionate and enthusiastic about their work
- Feeling a sense of responsibility toward society
- Competitive and capable of thriving in competitive environments
- Innovative

These characteristics indicate that identifying problems and demonstrating a desire to create solutions are fundamental aspects of entrepreneurship. Ventures are often born out of necessity. When an individual experiences a problem in daily life or witnesses one faced by others, it is likely that the issue affects many people. While the pursuit of economic gain may drive entrepreneurial efforts, the curiosity to explore and the urge to create often lead entrepreneurs to turn crises into opportunities by devising solutions to these problems.

Entrepreneurship Education

Entrepreneurship education refers to training provided by mentors or educators to entrepreneurs or individuals aspiring to be entrepreneurs, equipping them with fundamental entrepreneurial knowledge, changing their perspectives, enabling them to develop and present prototypes, establish networks, conduct target audience and market research, and ultimately bring their projects to life. This process aims to provide both material and intangible benefits to support these individuals.

Such training is often conducted in structures known as technoparks, technocities, or incubators, where universities and industries collaborate. These initiatives nurture entrepreneurs and facilitate the realization of new entrepreneurial ideas. Additionally, some undergraduate and postgraduate programs in universities offer courses on basic entrepreneurship and establish departments focusing on innovation and entrepreneurship.

Historically, entrepreneurship education began in universities in the United States. Initially introduced as course content at undergraduate and postgraduate levels, the system later expanded to other locations, meeting growing demand. Tosunoğlu summarizes this development as follows: *"The first entrepreneurship training in the United States began in 1947 at Harvard Business School. The first academic programs on this subject started in the 1960s and gradually became widespread. By 1993, over 400 U.S. universities offered entrepreneurship courses at undergraduate or postgraduate levels, and this number increased to 1,600 by 2003. Promoting entrepreneurship to create a more entrepreneurial Europe has been among the European Union's primary policies"* (Tosunoğlu, Ürper, & Başar, 2013:139).

These figures have risen in line with technological advancements, increased communication, and growing human needs. While private institutions and organizations have recently joined the entrepreneurship ecosystem, universities remain the primary hubs for such initiatives.

This priority led to the emergence of the concept of Entrepreneurial Universities in the digital age of the 2000s. This concept, first introduced into the literature by Burton Clark, has significantly influenced the traditional structure of universities. The following statements support this assertion:

"The concept of Entrepreneurial Universities, introduced by Burton Clark in 1998, is noteworthy for integrating entrepreneurship with university functions and presenting a new type of university. Significant transformations and reforms have taken place in the higher education systems of many countries today. The fundamental philosophy behind entrepreneurial universities is gradually replacing traditional research universities" (Çetin, 2007:218).

"The primary actors in an ecosystem centered around the university are primarily the university itself, followed by technology development zones, technology transfer offices, or technology and business development centers based on university-industry collaboration" (Fetters, Greene, Rice, & Butler, 2010:178).

For entrepreneurship education to gain a solid footing in contemporary industry, it must go beyond theoretical knowledge to include practical applications. Within this context, the presence of creative industries in the industrial landscape underscores the importance of integrating entrepreneurship and design education. Conducting these two disciplines simultaneously enhances both innovative thinking and the capacity for business success. While design education focuses on developing creative problem-solving and innovative thinking skills, entrepreneurship education enables the transformation of these skills into tangible projects in the business world. Consequently, combining design and entrepreneurship education significantly increases entrepreneurs' chances of success, positioning them more effectively within creative industries.

Creative Industries

Creative industries encompass fields that involve creativity, design, and the production of ideas. These industries are associated with various domains that incorporate creation and innovation, such as art, design, media, entertainment, fashion, cinema, music, and publishing. The intersection of design and entrepreneurship lies within creative industries.

Unlike traditional manufacturing sectors, creative industries prioritize creativity and ideas as the primary factors of production. The critical aspect of this sector is the convergence of creativity with an industrial domain and its realization in practical applications. Therefore, the creativity, innovation, and industry experience of individuals and organizations operating within this sector are of paramount importance.

The United Kingdom's Department for Culture, Media, and Sport (DCMS) offers a widely recognized definition of creative industries in the literature: *"Sectors that rely on individual creativity, skill, and talent and have the potential to create wealth and employment through the development and exploitation of intellectual property"* (DCMS, 2001:4).

In addition to this definition, DCMS has prepared various reports to identify creative industry domains, utilizing Standard Industrial Classification (SIC) codes. These reports state that: *"DCMS developed this proposal by primarily redefining creative professions in light of changing technology and activity perceptions, later determining that any industry with more than 30% creative employment could be considered a candidate for classification as a creative industry"* (Seçilmiş, 2015:11).

Creative industries bridge the concepts of design and entrepreneurship, as both fields focus on transforming ideas into commercial value through creativity and innovation. While design enhances the aesthetic and functional aspects of products or services, entrepreneurship encompasses strategies for presenting these designs to the target audience and establishing a sustainable market. For designers to thrive in this intersection and assume leadership roles, gaining entrepreneurial experience during their education is crucial. These two concepts form a mutually sustaining cycle, reinforcing each other in their shared pursuit of problem-solving and innovation.

The Lack of Entrepreneurship Education for Designers

In the 2011 Icograda Design Education Manifesto, which includes over twenty articles authored by design educators from various countries, a section by Steven Heller and Lita Talarico highlights six key themes: authorship, collaboration, citizenship, design thinking, entrepreneurship, and intellectual property. Despite being written in the past, this manifesto, which envisions the future of design education, argued that entrepreneurship should be an integral part of design education.

Design education traditionally focuses on producing the best outcomes based on established principles. However, when considering the future of design education, it becomes evident that this approach alone will no longer suffice. Design education should not be limited to achieving excellence in production; instead, it must also equip designers with the knowledge and skills to actively participate in post-production processes. In this context, entrepreneurship education becomes essential.

As noted by Heller and Talarico (2011:84): *"Speaking the language of entrepreneurship elevates the designer to a more commanding role, enabling mastery of skills and strategies to create, develop, and produce viable commercial and social products and campaigns."* However, courses on entrepreneurship are predominantly offered in departments such as Economics or Business Administration. Entrepreneurship is often associated with financial content, and students from other disciplines can only access these courses through the university's shared elective course pool. This significantly

reduces the likelihood of design students enrolling in such courses, highlighting the gap in entrepreneurship education for designers.

Despite the growing emphasis on interdisciplinary approaches in education, the lack of entrepreneurship courses specifically tailored to design students limits their ability to transform creative ideas into market-ready solutions. This gap underscores the need for a more integrated educational model that empowers designers with the entrepreneurial competencies required to thrive in competitive creative industries.

Survey on Entrepreneurship Awareness Among Design Students

To better understand the lack of entrepreneurship education in the field of design, Dr. Duygu Sezgin conducted a survey involving 55 students as part of her doctoral dissertation titled *Design Entrepreneurship in Turkiye*. The aim of the survey was to measure students' familiarity with the concept of entrepreneurship and their experiences in entrepreneurial activities. Throughout the research process, students were transparently informed at all stages, and participation was entirely voluntary. To ensure the protection of personal data and confidentiality, all data were anonymized and used solely for academic purposes. The research process was carried out in accordance with ethical guidelines.

Table 2. Summary of survey questions and results

Questions	Response	f	%
Q1. Have you heard of the concept of entrepreneurship before?	Yes	53	96.4
	No	2	3.6
Q2. Have you ever received training on entrepreneurship?	Yes	18	32.7
	No	37	67.3
Q3. Have you ever participated in an entrepreneurial project?	Yes	15	27.3
	No	40	72.7
Q3. Which option best represents you after graduation?	Develop my own project and become an entrepreneur	34	61.8
	Work as a salaried graphic designer in a corporate company	17	30.9
	Work as a graphic designer while pursuing a master's degree and aiming for an academic career	1	1.8
	Work as a graphic designer while also engaging in entrepreneurial activities	1	1.8
	Pursue a master's degree	1	1.8
	Left blank	1	1.8

These results indicate that the majority of students (96.4%) are familiar with the concept of entrepreneurship. However, a significant portion (67.3%) has never received entrepreneurship training, and 72.7% have not participated in any entrepreneurial projects. Despite their awareness of the concept, many students lack experience and, more importantly, formal education in entrepreneurship.

In response to the final question, 61.8% of the students stated that they intend to develop their own projects and become entrepreneurs after graduation. This finding demonstrates that despite the lack of entrepreneurship education, there is strong entrepreneurial potential among students.

The survey findings reveal that although design students are generally familiar with the concept of entrepreneurship, they face significant gaps in terms of entrepreneurship education and project participation. Nevertheless, the majority of students expressed a desire to engage in entrepreneurial activities. This highlights the necessity of enhancing entrepreneurship education and incorporating practical courses into design curricula. The survey results provide quantitative evidence supporting the importance of integrating entrepreneurship education into design programs to foster well-rounded, innovative designers.

Integration of Entrepreneurship Education into Design Education

To integrate design and entrepreneurship processes effectively, it is crucial to first highlight the similarities between them. These similarities can be summarized in four main points. First, both processes focus on solving a problem. In the design process, the problem is solved to meet the needs of the product, whereas in entrepreneurship, the goal is to address market needs or create a business model. Second, both processes involve creating a prototype to test how the solution

works. While design utilizes physical or digital prototypes, entrepreneurship develops prototypes such as business models, product designs, or user experience projects. Third, the prototypes generated in both processes are tested and evaluated. This evaluation determines whether the solution meets the needs and aligns with the market and target audience. Finally, feedback from tests and evaluations in both processes leads to revisions and the development of new solutions. These similarities reveal that design and entrepreneurship are iterative, problem-solving-oriented processes.

Another critical point to consider is whether entrepreneurship is an inherent trait or a learned skill. The debate over whether "entrepreneurship is innate or can be learned through education" has been the subject of much research. While personality traits play a role, entrepreneurship can indeed be learned through education. The key lies in the conditions and content of the education provided. A well-designed entrepreneurship education can uncover latent potential. With a robust entrepreneurship education, individuals can not only contribute to their personal development but also create employment opportunities, benefiting their communities, nations, and even the world. Supporting this perspective, Prof. Dr. Semra Güney states: *"Individuals will acquire previously unrecognized entrepreneurial skills through education and enhance their knowledge to become successful entrepreneurs"* (Güney, 2008:27).

The *Global Entrepreneurship Monitor (GEM)* identifies three main barriers to entrepreneurship: *"social and cultural barriers, lack of capital, and lack of education."* In the United States, policymakers focus on education as a critical first step in fostering long-term entrepreneurship, particularly in regions most affected by manufacturing and industrial job losses (Rideout & Gray, 2013). These insights demonstrate that entrepreneurship can be learned and productive entrepreneurs can be cultivated through proper education.

The relationship between design education and entrepreneurship combines the entrepreneurial skills required to market and sell products or services with the creative expertise inherent in design. While design education focuses on teaching the development of aesthetic and functional aspects of products, entrepreneurship education imparts skills for marketing, sales, and management. This synergy equips designers with the ability to market and manage their creations and allows entrepreneurs to appreciate the value and functionality of design. Consequently, in design technoparks, the products created by designers can achieve higher quality, aesthetics, and functionality.

Design should not merely focus on production but must also secure a place in the market. To achieve this, design education must intersect with entrepreneurship. Both concepts are aimed at solving life's problems, and one of the first educational institutions to combine them with this mission was the Bauhaus School, established in 1919 in Germany by architect Walter Gropius.

In addition to its profound influence on the history of art and design, the Bauhaus School had another significant mission: addressing industrial needs. Opened with the philosophy that "art is for society," the Bauhaus produced solutions tailored to societal needs through art and design. These solutions were not only theoretical but also developed practically in school-affiliated workshops and tested for applicability, resembling today's technopark concept. Prof. Nazan Erkmen's summary of the Bauhaus approach supports this assertion: *"The Bauhaus philosophy aimed to dismantle the wall between applied and fine arts, fostering an environment for their mutual interaction. The Bauhaus educational model was based on a workshop system to develop skills, but the goal was never to train artisans. Workshops were used as research laboratories where industrially required modules were prepared. For the first time, designs were created to meet industrial needs, prototypes were made in textile, glass, and ceramics workshops, and production was developed in factories. Society had the opportunity to use designs realized by artists for the first time. The school aimed to raise artists' awareness of social issues within their communities and instill responsibility while encouraging art to address societal problems"* (Erkmen, 2009:17-18).

The integration of design and entrepreneurship education plays a critical role in advancing creative industries. Designers must possess entrepreneurial skills not only to create aesthetically appealing products but also to ensure their success in the market. This integration enables designers to engage more effectively in the business world and allows entrepreneurs to better understand the value and functionality of design. The convergence of design and entrepreneurship education fosters projects that are both innovative and commercially successful.

Another vital dimension of this integration is the strong connection between entrepreneurship and industry, which facilitates the development of more industry-focused projects. When design and entrepreneurship merge, creative processes extend beyond the art world into technology and industry. The skills gained from entrepreneurship education make designers more equipped and competitive, while entrepreneurs enhance their user-centered thinking abilities before introducing products to the market.

Today's creative industries encompass a wide spectrum, from art to technology, and professionals in these fields greatly benefit from expertise in both design and entrepreneurship. The integration of entrepreneurship education into design education enables the next generation of entrepreneurs to not only conduct business but also innovate and develop creative solutions to societal challenges. This process empowers individuals to bring their projects to life while making a global impact.

In conclusion, the fusion of design and entrepreneurship education enhances individual competencies and contributes to the growth of creative industries and the strengthening of innovation. Developing this educational model will nurture a generation of creative and entrepreneurial individuals capable of meeting industry demands. This collaboration between designers and entrepreneurs has the potential to evolve into a sustainable model for economic and social development.

The Importance of Integrating Entrepreneurship Education into Design Curricula

The integration of entrepreneurship education into design education not only enhances students' creative potential but also equips them with the competencies needed to become successful and effective leaders in the business world. This type of educational model enables designers to produce not only aesthetic and functional products but also acquire the skills necessary to market, manage, and transform these products into sustainable business models.

Although entrepreneurship education is known to have started in primary and secondary schools in the United States and Europe, it is now predominantly observed at the university level. Therefore, analyzing course content through syllabi or instructors' input offers the most reliable approach. In Prof. Dr. Özlem Çetinkaya Bozkurt's book *"Recommendations from Successful Entrepreneurs and Academics,"* a survey conducted with faculty members teaching entrepreneurship courses revealed the following findings, each exceeding 50% agreement: 79% of them believe that the content of entrepreneurship courses should be conducted as a business creation project. 57% of them advocate transforming entrepreneurship courses into seminar-based classes where successful entrepreneurs from the industry give lectures. 73% of them suggest that recommendations from successful industry entrepreneurs should be considered when determining the course content. 86% of them emphasize the need to update course materials in line with industry changes and new applications.80% of them find that teaching techniques such as case studies and scenario analyses are more effective than theoretical lectures. 66% of them propose that team-based work is more effective than individual assignments in entrepreneurship courses (Çetinkaya, 2011).

Based on this information, the following course content is proposed for production-focused faculties, particularly for students in art and design-related departments, to develop their entrepreneurial projects. To integrate entrepreneurship education into design curricula, it is essential to create practical and applied courses specifically tailored to design disciplines. These courses enhance both students creative thinking skills and their ability to succeed in the business world.

An Example of an Innovative Educational Model: 16-Week Course Structure

Below is a proposed course model designed for design departments. The course spans a 16-week curriculum and has been implemented for three years as part of the GRA 412 "Design and Entrepreneurship" senior-year course by Dr. Duygu Sezgin at the Department of Graphic Design, Faculty of Fine Arts, Istanbul Yeni Yüzyıl University.

Table 3. Weekly course content and topic details of the example model prepared for a 16 week design and entrepreneurship course

Week	Topic	Description
1	Course Structure - Examples of Entrepreneurial Projects	The aim of the course, its content, and examples of projects are introduced.
2	What is Entrepreneurship? Who is an Entrepreneur? How to Find a Business Idea?	The concept of entrepreneurship and the characteristics of entrepreneurs are discussed. Methods of finding business ideas are explored. The concept of entrepreneurship is linked to design. Students are asked to identify a problem for the entrepreneurial projects they will work on throughout the semester. They are instructed to develop a solution for this problem that will transform into an entrepreneurial project. They are required to relate their problem selection and solutions to their field of study. They are also asked to use their professional knowledge in branding and corporate identity throughout the visualization processes of the project.
3	What is a Business Model Canvas?	The structure of the business model canvas and how it is used in a business plan are explained. Students are informed that they must complete this canvas for their projects before the midterm. The development of the canvas is tracked in each class.
4	How to Perform a SWOT Analysis? What is a Value Proposition?	The strengths and weaknesses of the project are determined through SWOT analysis. The concept of value proposition is explained with examples.
5	How to Perform a SWOT Analysis? What is a Value Proposition?	The topics from the previous week are further elaborated, and practical exercises are done based on the SWOT table.
6	Who is the Customer and Target Audience?	The process of identifying the target audience and creating customer profiles is discussed.
7	What is a Moodboard? How is It Prepared?	Techniques for creating moodboards are explained, and visual concept development exercises are conducted. Students are asked to use their design-related knowledge.
8	**Midterm Exam**	The students' knowledge and application skills are assessed based on the topics covered in the first seven weeks. They are required to submit the Business Model Canvas, SWOT Analysis, and Moodboard as documents.
9	What is Social Entrepreneurship?	The definition of social entrepreneurship, examples, and its contributions to society are discussed.
10	What is Revenue and Pricing?	Revenue models and pricing strategies are discussed based on the entrepreneurial projects where students have created business models, conducted SWOT analyses, and developed moodboards.
11	How to Prepare for the Investment Process?	The processes of communicating with investors, preparing a business plan, and presentation techniques are examined.
12	How Does the Company Formation and Branding Process Work?	The steps of company formation, branding, and brand management are elaborated.
13	How to Present? What Are Presentation Techniques?	Effective presentation techniques are taught. Details are provided regarding how their projects should be presented.
14	Final Preparation	Preparation for the final exam, including the creation of project presentation files and oral presentation practices. Final presentation details are shared with students through sample presentation files.
15	Final Preparation	Final project details are completed, and a presentation rehearsal is conducted.
16	**Final Exam**	Students submit both written project files and deliver oral presentations. A jury-investor presentation environment is created in class, and time management is ensured using a timer**.**

These findings demonstrate the necessity of enabling individuals who undergo this training to gain mastery over all stages of their projects, from the ideation phase to the end-user experience. To achieve this, it is crucial for trainees to engage not only in classroom activities but also in active fieldwork within the industry. This includes recognizing

competitors, analyzing existing operational systems, comparing similar projects with their own, and gathering user experience data and customer feedback.

Simultaneously, integrating entrepreneurship training with the relevant art and design department is vital. In this example, which focuses on the Department of Graphic Design, students were tasked with creating brand identities, designing corporate identities, and utilizing design principles while preparing moodboards. Similar discipline-specific attributes can be incorporated into entrepreneurship education in other art and design departments.

This program serves as an exemplary model, illustrating how entrepreneurship education can be tailored and integrated into different creative disciplines.

Conclusion

This study demonstrates that the integration of design and entrepreneurship disciplines can significantly contribute to both educational processes and creative industries. Design education fosters creative problem-solving and innovative thinking skills, while entrepreneurship education enables the transformation of these skills into tangible projects. Particularly, the applied education model has proven effective in enhancing students' creative and entrepreneurial competencies.

The educational model employed in this study enabled students to approach design projects with an entrepreneurial mindset, equipping them with skills in business model creation, customer analysis, and product marketing. Survey results and jury evaluations revealed that students improved their awareness and knowledge throughout this process, and that applied courses provided an effective learning environment. The sustainability of the example course model over three years validates this assertion.

Integrating design and entrepreneurship education not only enhances individual skills but also lays the foundation for producing more effective and innovative solutions in the creative industries. In this context, it has been concluded that the proposed model, either in its current form or adapted for specific disciplines, could be implemented across various art and design fields, fostering interdisciplinary collaboration.

The outcomes of this study have facilitated the development of an innovative model both theoretically and practically, offering content that can guide future educational initiatives.

Recommendations

To enhance the integration of entrepreneurship education in design curricula, the following recommendations are proposed:

Applied and Interdisciplinary Courses: Incorporate practical, project-based courses tailored to design students to strengthen their entrepreneurial skills.

Industry Collaboration: Establish partnerships with industry professionals to provide students with real-world insights and mentorship opportunities.

Continuous Curriculum Updates: Regularly revise course content to align with evolving market needs and technological advancements.

Encourage Team-Based Work: Promote collaborative projects to foster teamwork, creativity, and problem-solving abilities.

These recommendations aim to bridge the gap between design education and entrepreneurial practice, preparing students for both creative and business success.

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Visual Bibliography

Figure 1. The Double Diamond model, developed by the British Design Council. https://www.designcouncil.org.uk/our-resources/framework-for-innovation/