

# Practice, Observation, and Gender Effects on Students' Entrepreneurial Skills Development When Teaching through Entrepreneurship Is Adopted: Case of University of Tunis El Manar

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**Abstract**—This paper analyzes the effects of gender, affiliation, prior work experience, social work, and vicarious learning through family role models on entrepreneurial skills development by students when they followed the teaching through the entrepreneurship method in Tunisia. We suggest that these variables enhance the development of students' entrepreneurial skills when combined with teaching through entrepreneurship. The article assesses the impact of these combinations by comparing their effects on the development of thirteen students' entrepreneurial competencies, namely entrepreneurial mindset, core self-evaluation, entrepreneurial attitude, entrepreneurial knowledge, creativity, financial literacy, managing ambiguity, marshaling of resources, planning, teaching methods, entrepreneurial teachers, innovative employee, and entrepreneurial intention. We use a two-sample independent t-test to make the comparison, and the results indicate that, when combined with teaching through the entrepreneurship method, students with prior work experience developed better six entrepreneurial skills; students with social work developed better three entrepreneurial skills, men developed better four entrepreneurial skills than women. However, all students developed their entrepreneurial skills through this practical method regardless of their affiliation and their vicarious learning through family role models.

**Keywords**—Affiliation, entrepreneurial skills, gender, role models, social work, teaching through entrepreneurship, vicarious learning, work experience.

## I. INTRODUCTION

ENTREPRENEURSHIP is gaining increasing importance both in theory and in practice. It is considered as an important driver of economic growth [1], [2] and as a life skill for the 21<sup>st</sup> century [3]. That is why policies and educational programs aimed at fostering entrepreneurial activity have emerged [4]. One of the important goals of these programs is to develop students' entrepreneurial skills [5]. Thus, universities look for teaching methods making students aware about the importance of being entrepreneurs and helping them to become more entrepreneurial [6]. As a result, the educational system is more and more focusing on developing students' entrepreneurial skills and abilities, and the goal of entrepreneurship education is to give students the knowledge, skills, and attitudes to act in an entrepreneurial way.

To assess the teaching methods, many studies were

conducted in order either to assess the rise in entrepreneurial skills of students at the end of the entrepreneurship course [7] or to explore the interaction between the developed skills [8], [9].

The emphasis is therefore placed on the importance of the teaching method with results that are in favor of teaching methods through action [10]. To our knowledge, no study has investigated the effect of teaching through entrepreneurship on the development of entrepreneurial skills of students taking into consideration their different profiles and backgrounds. We consider that factors such as gender, affiliation, prior work experience, social work, and vicarious learning may influence entrepreneurial skills development by students when they have a learning through entrepreneurship method. Thus, we aim to uncover this effect by answering the following research question: What effect have gender, affiliation, prior work experience, social work, and vicarious leaning on the development of students' entrepreneurial skills when they have a learning through entrepreneurship method?

To answer this question the remainder of the paper is structured as follows: In the next section, we detail the relationship between learning and entrepreneurship, and we present the research framework and hypotheses. The subsequent section describes the experiment, including samples and course structure, after which the research method and results are presented. A discussion of the results is provided in the final section, along with theoretical and practical implications, limitations, future research opportunities and conclusions.

## II. LEARNING AND ENTREPRENEURSHIP: FACTORS AFFECTING STUDENTS' SKILLS DEVELOPMENT

### A. Entrepreneurship as a Process of Learning

Reference [11] proposed a dynamic learning perspective of entrepreneurship through which he presented entrepreneurship as a process of continuous learning. He based his proposal on the statement of [12, p.6] that "entrepreneurship is a process of learning, and a theory of entrepreneurship requires a theory of learning". The dynamic learning perspective of entrepreneurship is important and enriching because, on the one

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hand, it stipulates the dynamism and continuity of the learning process through entrepreneurship and this throughout the life of the company and not only during the first years of launch. On the other hand, it offers a new, vast avenue for studying entrepreneurial individuals [11]. From this standpoint, entrepreneurship is viewed as a learning process, specifically in terms of gaining knowledge and skills related to the establishment of an organization [13] and its development [11].

Based on works done within the adult and management learning literature, this perspective considers learning as an intrinsically social process [14], [15] characterized by the concept of “situated learning,” where learning is described as “an integral and inseparable aspect of social practice” [16, p.31]. By considering the learning process in entrepreneurship domain, [11, p.388] “stresses the importance of viewing entrepreneurs as practitioners who operate within multiple, overlapping social communities of knowledge and practice”. The author emphasizes the importance of the social dynamic inherent within entrepreneurial learning. In this context, [17] presents entrepreneurial networks as “learning systems” and [18, p.221] states: “critical incidents and learning occur from the experience of dealing with customers/suppliers and other stakeholders”. This perspective emphasizes the importance of learning by acting and the key role of the evolving nature and value of network relationships in all aspects of entrepreneurial activity which leads to learning [11].

By proposing the dynamic learning perspective of entrepreneurship, [11, p.389] “places individuals involved in the entrepreneurial learning process—including network actors and “powerful others” such as the entrepreneur’s spouse, family, and friends—at the heart of continuing inquiry”.

Reference [11] proposes that entrepreneurial learning can occur through direct experiences, “learning by doing” or through prior experiences learning only occurs through participation, reflection, and action. However, [19] proposes a learning from the behavior of others or a vicarious learning.

#### *B. Learning Entrepreneurship through Education: The Importance of Action*

Reference [20] considers entrepreneurship as a life-long and a life-wide experience and stipulates that it should encompass all stages of education. Entrepreneurship is no longer focusing on business creation and aims financial gain, it is rather focusing on all aspects of society, and it is defined as a process of value creation that can be financial, cultural, or social [21]. According to this view, entrepreneurship is “embedded in individuals, a mindset, which, when nurtured, has a collective impact and can create an entrepreneurial culture or society” [10, p.4]. Developing an entrepreneurial mindset is very important [22], [23].

Entrepreneurship is also considered as a competency containing multiple skills going from leadership to innovation, risk taking and management [10]. Education and life experiences play key roles in this development and individual becomes more entrepreneurial through them [24]. With the aim of combining these two ways to allow the development of students’ entrepreneurial skills, entrepreneurship education has

appeared as a pedagogy in which students learn through entrepreneurship [25]. Teaching through entrepreneurship is about learning with and through real-life entrepreneurship and experiencing market forces [26]. This teaching method enhances learning through action and practice [27]. Hence, entrepreneurship is taught through living the real life of entrepreneurs [28]. It allows learners to develop a life experience in this field and encourages them to view their disciplines in terms of opportunity and value [29].

By adopting this teaching method, lecturers push learners to become actual entrepreneurs [30]. They carry out projects and deal with real businesspeople. Learners live real experiences and develop their entrepreneurial skills by facing real problems and taking real risks [31]. The most frequently used tools in this theme are pitching business ideas to investors and shareholders and teaching by real-life entrepreneurs [25]. Reference [25, p.7] considers this theme as the “entrepreneurial learning suggestions for EE programs’ best practice”. Scholars recommend the use of this approach when the aim is to develop students’ entrepreneurial skills and the simulation software is not available [7].

#### *C. Learning Through Work Experience and Social Work: Development of Students’ Entrepreneurial Skills*

Learners come to the university with different profiles, different experiences, and different backgrounds. Their assimilation of knowledge and their development of entrepreneurial skills when having a teaching through entrepreneurship method depends on these elements.

Participation in work is considered as a way that enables people to learn [32] by observing work activities and the workplace or listening to other workers [33]. Work offers a moment-by-moment learning [34], [35]. This learning occurs through everyday engagement at work. Learning through work is shaped by the activities individuals engage in, the direct assistance they access, and the indirect contributions offered by the physical and social environment of the workplace. Work activities act to reinforce, refine, or generate new forms of knowledge [36]. Reference [37] states that students learn through work experience. Students with work experience learn better form teaching through entrepreneurship as they will develop their competencies in response to expectations they already made about the future and past work experiences [38]. Their experience in work when combined with the learning through action process proposed by this teaching method will lead them to the acquisition of new business skills, knowledge, habits, and attitudes. Thus, based on these arguments, we propose that:

- Hypothesis 1 (H1): Students with work experience develop better their entrepreneurial skills when having a teaching through entrepreneurship program than those with no work experience.

Social workers deal with individual and group who have social problems such as facing a particular challenge, bringing a community together to address a common issue, or building policies that can change lives. They must understand and address these problems and build the kinds of relationships that

get the job done [39]. Having experience in social work enable the acquisition of knowledge, skills, and self-awareness that facilitates further skill development [40]. Social work develops workers skills [41] and we state that students with social work develop better their entrepreneurial skills. We propose:

- Hypothesis 2 (H2): Students with social work experience develop better their entrepreneurial skills when having a teaching through entrepreneurship program than those with no social work experience.

#### *D. Affiliation and Gender Effect on Entrepreneurial Skills Development through Education*

Traditionally, entrepreneurship was a specific program or discipline taught in business schools which excluded many disciplines from the field, as it was perceived that it was outside their domain of expertise [10]. However, since entrepreneurship was reconceptualized as a mindset that encourages holistic, proactive learners, a wider acceptance outside non-traditional areas and at all levels of education has been generated [10]. In this context, teaching entrepreneurship is more and more based on “learning through action and practice” [27], and the traditional prescriptive of education based on theoretical content is no longer appropriate [7], [27]. Thus, learners need to collaborate across disciplines and as a result, transversal skills are key [42], [43]. The learning through action method proposed in teaching through entrepreneurship helps learners to develop a set of entrepreneurial skills by making them living real entrepreneurs’ life and adopting collaborative pedagogies which provide authentic learning experiences for students by placing them in complex “real world” scenarios [10]. The development of students’ entrepreneurial skills does not depend on students’ background, whether it is in management or economic field or not, but on the immersion of these students in the practical method of teaching entrepreneurship. Based on these arguments, we propose that:

- Hypothesis 3 (H3): Students develop their entrepreneurial skills when having a teaching through entrepreneurship program regardless their affiliation.

Previous studies yield unclear findings regarding the influence of gender on the connection between entrepreneurship education and the development of entrepreneurial skills. While some studies do not report any significant difference across the two groups [44], many studies state the existence of a difference in favor of men. For example, the study conducted by [45] shows that women need a higher level of education to assess themselves as capable to perform entrepreneurship-related tasks. Author explains this by referring to cultural beliefs about gender roles pushing women to perceive themselves as less competent in entrepreneurship tasks normally regarded as male. Other studies, such as the one conducted by [46], show that entrepreneurship education has positive effects on entrepreneurship skills development that are stronger for women than for men. Confronted with the diverse outcomes observed in prior studies regarding the role of gender, we posit the following hypothesis:

- Hypothesis 4 (H4): The influence of teaching through Entrepreneurship on students’ entrepreneurial skills differs

between male and female students.

#### *E. Role Models and Developing Students’ Entrepreneurial Skills: Effect of Vicarious Learning*

The concept of social learning theory – vicarious learning derives from the work of [19]. This concept is defined as “a process that allows an observer of another individual’s model behavior to change his behavior without directly experiencing the consequences” [47, p.1054]. It is also defined as being able to observe or ‘listen in’ on experts or peers as they discuss a new topic [48] or as learning through the experiences of another [49]. This concept introduces a way of learning that does not occur through participation, reflection, and action but from the behavior of others. It provides learners with the chance to benefit from the experiences of their peers as a means of self-directed learning [50]. According to [51], when vicarious learning is employed thoughtfully within an action learning setting, it has the potential to enhance the overall effectiveness of the learning process.

The role models play a key role in the vicarious learning and in career choice. In fact, the individual forms a cognitive evaluation of the overall attractiveness of a specific career through the process of vicarious learning. This evaluation is based upon the reinforcements received by the model and the behaviors required for such reinforcement [52]. In this context, observational learning can be useful either to encourage or discourage a person from entering a career field like the one observed [53], [54].

Given the primary role that they play in the socialization process, parents are the most likely to serve as significant entrepreneurial role models who either encourage or discourage their children in the pursuit of an entrepreneurial career [52]. This role-modeling process may explain the reason that entrepreneurial individuals are often the children of entrepreneurial parents [55]-[57]. The presence of entrepreneurial parents who play a role model enhances the students’ education and training aspirations [52]. Based on these arguments, we propose that:

- Hypothesis 5 (H5): Students with a parent entrepreneurial role model develop better their entrepreneurial skills when having a teaching through entrepreneurship program than those who have not.

### III. DESCRIPTION OF THE EXPERIMENT

In this study, the participants are students coming from two different higher institutions of University of Tunis El Manar namely the Faculty of Economics and Management of Tunis and the Higher Institute of Medical Technologies of Tunis. Students took entrepreneurship courses that were taught entrepreneurship by two different lecturers using teaching through entrepreneurship methods. In the comparison, we took into consideration different variables related to the gender, the affiliation, the professional experience, the existence of family entrepreneur models which refers to the vicarious learning, and the social work.

The result of our study shows that teaching through entrepreneurship when combined with the existence in the

students' families of entrepreneurs who are role models develops entrepreneurial skills of all students. But when this teaching method is combined with the gender, the path followed whether economic/finance or scientific, the fact that students have professional experience, or the fact that they made social work, most entrepreneurial skills are developed for all students except for specific ones that we will present in the following paragraphs and to which we may pay a particular attention.

#### A. Respondents

The questionnaire was administered online, at the end of the entrepreneurship module, related to the first semester of the academic year 2021-2022.

The sample was composed of 69 students from Faculty of Economics and Management of Tunis (FEMT) and 69 students from Higher Institute of Medical Technologies of Tunis (HIMTT) who validated this module and agreed to take part in this survey. The age of most respondents (74.6%) is between 20 and 24 years old. Of the respondents, 55.8% were women and 44.2% were men. 44.9% of the participants have already work experience while 55.1% do not. 43.5% have already social work by being implied in associative activities, while 56.5% did not. The respondents of the FEMT came from two different backgrounds: undergraduate Finance students accounted for 71%, and Economy students accounted for 29%. The respondents of the HIMTT came from two different backgrounds too: undergraduate biomedical-engineering students accounted for 44.9%, and medical biotechnology students accounted for 55.1%.

#### B. Course Structure

The entrepreneurship course in FEMT and HIMSTT is taught by two different teachers using practice-oriented courses which is teaching through entrepreneurship [58], [59].

The practice-oriented courses are taught in a workshop format for one and a half hours per week for both groups. Students worked in teams in both institutions, they run their own real-life business, and they took responsibilities for their enterprises.

When we compared the two teaching programs adopted by the two teachers, we noticed that they had common activities but there are some changes to make the course more adapted to the affiliation of students. In fact, both teachers conducted an ideation activity with students to make them choose their project ideas, and made students compete for the various positions within the company, ranging from CEO to various management positions. The aims of these exercises are to encourage students to think about real problems to solve, to push them to reflect on the requirements for each position and to assess their strengths accordingly. Thus, at the end of these activities, students developed new ideas, experienced professional responsibility within their companies, took risks and managed conflicts and overcame the challenges of keeping the team together. Thus, they developed their entrepreneurial mindset and creativity.

Both courses contained an activity of Business Model Canvas (BMC). The aim of this activity is to make students

aware of the importance of the market discovery and research.

As for the differences in the programs, and since FEMT students are familiar with managerial, marketing, and financial aspects, more in-depth activities aiming at better conducting market research have been carried out. In fact, activities of conducting interviews with potential customers and professional actors to get relevant feedbacks and to better plan the offer were held. For that purpose, students discovered tools such as "Persona", "interviews guideline", "empathy map" and "aggregated empathy maps" of which they made use during the workshop sessions. This use aims to enable them making the market segmentation and to help them to clearly define each segment value proposition. After conducting these different activities, students were able to correct their BMC considering market feedbacks. Another step consisted of conducting them to think about the financial aspect of their business and to think about their financial potential sources. The final activity of prototyping was held, and students made a simple prototype of their offer. They were invited to involve their social networks to improve the prototypes since they do not master the technical aspect.

Concerning the HIMTT program followed by students, the focus was rather on the technical aspect of their projects because that is where their strength lies. Thus, after the activity of the BMC discovery and development, many sessions of prototyping were held. Students were continually asked to improve their prototypes to get a functional one by relying on their technical skills, asking for help from their teachers who are specialists in the field, and obtaining feedback from potential users.

Although the differences, in both institutions, activities were important to develop students' financial literacy, their resources marshaling ability, and their ability to manage ambiguity. They also developed their entrepreneurial attitude, their innovation as an employee, and their entrepreneurial intention as well as their entrepreneurial knowledge.

In both institutions, integrating these activities into the workshops necessitated deploying an extensive array of educational tools and fostering an entrepreneurial mindset among the teachers responsible for the module. And to create the expected effects in the development of their entrepreneurial skills, these aspects should thus be perceived as such by the students.

## IV. RESEARCH METHOD

We will begin this section by presenting the entrepreneurial skills investigated followed by the instruments used to measure them. We will finish with the presentation of the results of our study.

#### A. Entrepreneurial Skills Investigated

The key role played by entrepreneurial education in assessing entrepreneurial skills, knowledge, attitudes, and mindsets among students is more and more recognized which pushed to the initiation of the ASTEE Project to identify these skills and to create a tool to measure them [5].

Reference [5, p.15] defined skills as "a combination of the

knowledge, the knowhow and the experiences that have been acquired and that are necessary/useful in order to carry out an activity in a professional way”. Concerning entrepreneurship, [60] advanced that both cognitively oriented skills and skills of a more non-cognitive character must be developed among students. This set of skills enables entrepreneurs to go through different stages in entrepreneurial ventures and to meet different challenges [61], [62].

In our case, we adopted the skills identified by the ASTEE project which cover both cognitively oriented skills and skills of a more non-cognitive character and we looked for identifying whether students developed or not through entrepreneurship four inclusive skill sets that are needed in the different phases of an entrepreneurial venture going from exploration to evaluation, and exploitation, and which are relevant in self-

employment and within established organizations [5]. It is about mindset, entrepreneurial knowledge, entrepreneurial skills and self-efficacy, connectedness to education, and connectedness to labor market.

We used the framework of skills offered by [5] for the following reasons:

- The large set of entrepreneurial competencies offered by this framework that measures students’ entrepreneurial mindset and intention, teaching methods and students’ perception of teachers’ entrepreneurial behavior.
- The measure tools were constructed to enable a comparison between two or more groups of students.
- The framework was used in the Tunisian context [7], [9] and in similar context [63] and showed its relevance.

The definitions given by [5] are shown in Table I.

TABLE I  
SKILLS DEFINITION [5]

Skill set	Variable	Definition
Mindset	Entrepreneurial mindset	When students focus on action and responsibility
	Core self-evaluation	It is about individual’s belief in his or her own capability to successfully perform challenging activities and tasks
Entrepreneurial knowledge	Entrepreneurial attitude	It is about individual’s attitude toward his/her own capability to successfully perform various entrepreneurial activities
	Creativity	Knowledge about how to identify opportunities, the context in which people live and work, how the economy functions and ethical positions of enterprises.
	Financial literacy	The ability to think in new and imaginative ways
Entrepreneurial skills and self-efficacy	Managing ambiguity	The ability to understand financial statements and budgets.
	Marshaling of resources	The ability to cope with uncertainty and ambiguity in the process of implementing and exploiting a business idea.
connectedness to education	Planning	The ability to assemble and organize resources to exploit a business opportunity.
	Teaching methods	The ability to plan and structure tasks.
	Entrepreneurial teachers	The teaching methods used to teach entrepreneurship
connectedness to labor market	Innovative employee	It Measures the extent to which students consider their teachers encouraging them to develop an entrepreneurial mindset.
	Entrepreneurial intention	It assesses an individual's capacity to creatively solve problems, work on personal ideas, and define his own tasks autonomously.
		It measures the propensity to engage in entrepreneurial projects.

TABLE II  
VARIABLES’ SCALE ITEMS AND RELIABILITY

Variable	Number of items	Cronbach’s alpha
Entrepreneurial mindset	3 items	0.810
Core self-evaluation	5 items	0.912
Entrepreneurial attitude	3 items	0.874
Entrepreneurial knowledge	3 items	0.877
Creativity	4 items	0.939
Financial literacy	3 items	0.928
Managing ambiguity	4 items	0.828
Marshaling of resources	4 items	0.924
Planning	4 items	0.924
Teaching methods	6 items	0.934
Entrepreneurial teachers	3 items	0.918
Innovative employee	3 items	0.925
Entrepreneurial intention	3 items	0.863

### B. Measures

Since we adopted the ASTEE framework to measure the skills developed by students through entrepreneurship education, we used the scales created by [5] for the ASTEE project. All the scales are seven-point Likert scales, where “1”

means “completely disagree,” and “7” means “completely agree”. These scales have the advantage of showing high reliability levels. Table II presents the variables, the number of items and the Cronbach’s alpha.

### C. Methods and Results

Since we are looking for testing the effect of gender, affiliation, professional experience, social work, and vicarious learning on the development of students’ entrepreneurial skills, we performed two-sample independent t-tests on the groups which were divided each time according to one of these different criteria. In these tests, we investigated whether the mean values significantly differed between respondents in the groups. The two-sample independent t-test is commonly used to measure the statistical differences between the means of two groups. In our study, the data meet the requirements of its use. In fact:

- The dependent variables are continuous while the independent variables are categorical.
- Each time we perform the test, all cases have values on both the dependent and the independent variables.

The two groups are independent which means that there is no relationship between the subjects in each sample. In our case, each time we change the independent variable (gender, affiliation, professional experience, social work and vicarious learning through family role models), (a) the subjects in the first group are not in the second group; (b) no subject in one group influenced subjects in the other group; (c) the groups did not influence each other.

The sample of data were randomly chosen from the population. Since the size of each sample is moderate, it makes the normal distribution of the dependent variable for each group unnecessary. In fact, in moderate or large samples, a violation of normality may still yield accurate p-values.

The last requirement is to test the assumption of homogeneity of variances (variances approximately equal across groups when  $p > 0.01$ ). For gender, according to Table III, this assumption is not violated for all variables.

TABLE III  
TEST OF HOMOGENEITY OF VARIANCE FOR GENDER

	Levene statistics	df1	df2	Sig.
Entrepreneurial mindset	0.082	1	136	0.775
Core self-evaluation	0.672	1	136	0.414
Entrepreneurial attitude	1.083	1	136	0.300
Teaching methods	4.110	1	136	0.045
Entrepreneurial teachers	0.311	1	136	0.578
Entrepreneurial knowledge	0.212	1	136	0.646
Creativity	0.603	1	136	0.439
Financial literacy	1.621	1	136	0.205
Managing ambiguity	0.847	1	136	0.359
Marshaling of resources	0.565	1	136	0.454
Planning	1.210	1	136	0.273
Innovative employee	0.006	1	136	0.938
Entrepreneurial intention	3.637	1	136	0.059

For the affiliation, according to Table IV, the assumption of homogeneity of variances (variances approximately equal across groups) is not violated for all variables.

TABLE IV  
TEST OF HOMOGENEITY OF VARIANCE FOR AFFILIATION

	Levene statistics	df1	df2	Sig.
Entrepreneurial mindset	0.001	1	136	0.980
Core self-evaluation	0.240	1	136	0.625
Entrepreneurial attitude	0.010	1	136	0.922
Teaching methods	0.483	1	136	0.488
Entrepreneurial teachers	4.384	1	136	0.038
Entrepreneurial knowledge	1.837	1	136	0.177
Creativity	0.078	1	136	0.781
Financial literacy	0.476	1	136	0.491
Managing ambiguity	0.439	1	136	0.509
Marshaling of resources	0.964	1	136	0.328
Planning	0.050	1	136	0.824
Innovative employee	0.245	1	136	0.622
Entrepreneurial intention	2.796	1	136	0.097

When taking into consideration the professional experience, and according to Table V, this assumption is not violated for all variables.

TABLE V  
TEST OF HOMOGENEITY OF VARIANCE FOR PROFESSIONAL EXPERIENCE

	Levene statistics	df1	df2	Sig.
Entrepreneurial mindset	1.169	1	136	0.281
Core self-evaluation	10.431	1	136	0.002
Entrepreneurial attitude	2.927	1	136	0.089
Teaching methods	7.597	1	136	0.007
Entrepreneurial teachers	1.667	1	136	0.199
Entrepreneurial knowledge	1.772	1	136	0.185
Creativity	2.393	1	136	0.124
Financial literacy	0.698	1	136	0.404
Managing ambiguity	2.239	1	136	0.137
Marshaling of resources	5.177	1	136	0.024
Planning	1.454	1	136	0.230
Innovative employee	4.232	1	136	0.042
Entrepreneurial intention	2.880	1	136	0.092

For social work, this assumption is not violated for all the variables.

TABLE VI  
TEST OF HOMOGENEITY OF VARIANCE FOR SOCIAL WORK

	Levene statistics	df1	df2	Sig.
Entrepreneurial mindset	1.472	1	136	0.227
Core self-evaluation	0.002	1	136	0.968
Entrepreneurial attitude	0.841	1	136	0.361
Teaching methods	1.247	1	136	0.266
Entrepreneurial teachers	0.266	1	136	0.607
Entrepreneurial knowledge	2.037	1	136	0.156
Creativity	2.563	1	136	0.112
Financial literacy	3.420	1	136	0.067
Managing ambiguity	0.033	1	136	0.857
Marshaling of resources	3.577	1	136	0.061
Planning	1.134	1	136	0.289
Innovative employee	0.826	1	136	0.365
Entrepreneurial intention	1.164	1	136	0.283

For vicarious learning through family role models, this assumption is not violated for all the variables.

TABLE VII  
TEST OF HOMOGENEITY OF VARIANCE FOR VICARIOUS LEARNING THROUGH FAMILY ROLE MODELS

	Levene statistics	df1	df2	Sig.
Entrepreneurial mindset	0.427	1	136	0.515
Core self-evaluation	0.623	1	136	0.431
Entrepreneurial attitude	0.233	1	136	0.630
Teaching methods	0.711	1	136	0.401
Entrepreneurial teachers	0.162	1	136	0.688
Entrepreneurial knowledge	0.045	1	136	0.833
Creativity	0.888	1	136	0.348
Financial literacy	0.337	1	136	0.562
Managing ambiguity	0.005	1	136	0.943
Marshaling of resources	2.599	1	136	0.109
Planning	1.398	1	136	0.529
Innovative employee	2.499	1	136	0.116
Entrepreneurial intention	2.140	1	136	0.146

In Table VIII, we present the results of the test corresponding to the gender effect.

TABLE VIII  
SURVEY RESULTS FOR GENDER EFFECT

Variable	Female Students mean (1st sample: n = 77)	95% CI	Male Students mean (2nd sample: n = 61)	95% CI	Δ Mean	TΔmean Sig.
Entrepreneurial mindset	4.7013	[4.37-5.02]	5.3005	[4.91-5.68]	-0.5992	-2.388*
Core self-evaluation	5.2571	[4.91-5.59]	5.5475	[5.18-5.91]	-0.2904	NS
Entrepreneurial attitude	4.8528	[4.42-5.28]	5.0328	[4.56-5.50]	-0.1799	NS
Teaching methods	4.2489	[3.88-4.61]	3.9809	[3.49-4.46]	-0.3200	NS
Entrepreneurial teachers	4.9827	[4.54-5.42]	4.9344	[4.46-5.40]	-0.5967	NS
Entrepreneurial knowledge	5.2078	[4.86-5.54]	5.2295	[4.82-5.63]	-0.0217	NS
Creativity	4.8701	[4.52-5.21]	5.4426	[5.06-5.81]	-0.5724	-2.223*
Financial literacy	4.2381	[4.54-4.59]	4.6831	[4.23-5.13]	-0.4449	NS
Managing ambiguity	4.8669	[4.59-5.14]	4.9795	[4.61-5.34]	-0.1126	NS
Marshaling of resources	4.8182	[4.49-5.13]	5.3484	[4.94-5.75]	-0.5301	-2.084*
Planning	5.0032	[4.64-5.36]	5.2254	[4.85-5.59]	-0.2221	NS
Innovative employee	5.4026	[5.04-5.75]	5.6557	[5.27-6.03]	-0.2531	NS
Entrepreneurial intention	4.7143	[4.30-5.12]	5.2951	[4.91-5.67]	-0.5808	-2.027*

Note: NS = not significant (p-value > 0.05), \*p-value < 0.05

TABLE IX  
SURVEY RESULTS FOR AFFILIATION EFFECT

Variable	Students of the FEMT mean (1st sample: n = 69)	95% CI	Students of the HIMTT mean (2nd sample: n = 69)	95% CI	Δ Mean	TΔmean Sig.
Entrepreneurial mindset	4.8696	[4.50-5.23]	5.0628	[4.70-5.41]	-0.1932	NS
Core self-evaluation	5.3420	[4.98-5.69]	5.4290	[5.07-5.78]	-0.0869	NS
Entrepreneurial attitude	4.5942	[4.16-5.02]	5.2705	[4.81-5.72]	-0.6763	-2.149*
Teaching methods	4.1932	[3.79-4.59]	4.0676	[3.63-4.50]	0.1256	NS
Entrepreneurial teachers	4.9130	[4.49-5.32]	5.0097	[4.51-5.50]	-0.0966	NS
Entrepreneurial knowledge	5.2126	[4.87-5.55]	5.2222	[4.82-5.62]	-0.0096	NS
Creativity	5.0761	[4.70-5.44]	5.1703	[4.80-5.53]	0.0942	NS
Financial literacy	4.9130	[4.54-5.28]	3.9565	[3.56-4.35]	0.9565	3.510***
Managing ambiguity	4.8007	[4.50-5.09]	5.0326	[4.70-5.35]	-0.2318	NS
Marshaling of resources	4.9783	[4.63-5.31]	5.1268	[4.74-5.51]	-0.1485	NS
Planning	4.9275	[4.56-5.28]	5.2754	[4.90-5.64]	-0.3478	NS
Innovative employee	5.3623	[4.99-5.72]	5.6667	[5.29-6.03]	-0.3043	NS
Entrepreneurial intention	4.9130	[4.53-5.29]	5.0290	[4.59-5.46]	-0.1159	NS

Note: NS = not significant (p-value > 0.05), \*p-value < 0.05, \*\*\*p-value = 0.001

TABLE X  
SURVEY RESULTS FOR PROFESSIONAL EXPERIENCE EFFECT

Variable	Variable	Students with no experience mean (1st sample: n = 76)	95% CI	Students with experience mean (2nd sample: n = 62)	95% CI	Δ Mean
Entrepreneurial mindset	4.7061	[4.35-5.05]	5.2849	[4.94-5.62]	-0.5788	-2.307*
Core self-evaluation	5.2132	[4.83-5.59]	5.5968	[5.30-5.88]	-0.3836	NS
Entrepreneurial attitude	4.6579	[4.20-5.10]	5.2688	[4.83-5.70]	-0.6109	NS
Teaching methods	4.0307	[3.67-4.38]	4.2527	[3.76-4.74]	-0.2219	NS
Entrepreneurial teachers	4.7281	[4.27-5.17]	5.2473	[4.79-5.69]	-0.5192	NS
Entrepreneurial knowledge	4.9868	[4.61-5.36]	5.5000	[5.15-5.84]	-0.5131	-1.979*
Creativity	4.8487	[4.48-5.21]	5.4597	[5.11-5.80]	-0.6109	-2.383*
Financial literacy	4.0658	[3.68-4.44]	4.8871	[4.49-5.28]	-0.8213	-2.963**
Managing ambiguity	4.7533	[4.43-5.07]	5.1169	[4.82-5.40]	-0.3636	NS
Marshaling of resources	4.8421	[4.45-5.22]	5.3105	[4.99-5.62]	-0.4683	NS
Planning	4.9046	[4.54-5.26]	5.3427	[4.98-5.70]	-0.4381	NS
Innovative employee	5.2719	[4.89-5.65]	5.8118	[5.47-6.14]	-0.5399	-2.131*
Entrepreneurial intention	4.6360	[4.23-5.03]	5.3817	[4.99-5.77]	-0.7457	-2.633*

Note: NS = not significant (p-value > 0.05), \*p-value < 0.05, \*\*p-value = 0.01

In Table IX, we present the results of the test corresponding to the affiliation effect. In Table X, we present the results of the test corresponding to the professional experience effect. In Table XI, we present the results of the test corresponding to the

social work. In Table XII, we present the results of the test corresponding to the vicarious learning through family role models.

TABLE XI  
SURVEY RESULTS FOR SOCIAL WORK EFFECT

Variable	Students with social work mean (1st sample: n = 60)	95% CI	Students without social work mean (2nd sample: n = 78)	95% CI	Δ Mean	TΔmean Sig.
Entrepreneurial mindset	5.2556	[4.90-5.60]	4.7436	[4.39-5.09]	0.5119	2.025*
Core self-evaluation	5.4433	[5.07-5.80]	5.3410	[4.99-5.68]	0.1023	NS
Entrepreneurial attitude	5.0222	[4.56-5.48]	4.8632	[4.42-5.30]	0.1589	NS
Teaching methods	3.8583	[3.38-4.33]	4.3397	[3.97-4.70]	-0.4814	NS
Entrepreneurial teachers	5.1500	[4.67-5.62]	4.8162	[4.38-5.25]	0.3337	NS
Entrepreneurial knowledge	5.3389	[4.97-5.70]	5.2222	[4.75-5.48]	0.2149	NS
Creativity	5.3417	[4.98-5.69]	4.9551	[4.58-5.32]	0.3865	NS
Financial literacy	4.3222	[3.93-4.70]	4.5214	[4.11-4.92]	-0.1991	NS
Managing ambiguity	5.2083	[4.87-5.53]	4.6923	[4.40-4.98]	0.5160	2.349*
Marshaling of resources	5.3417	[5.00-5.68]	4.8301	[4.46-5.19]	0.5115	2.005*
Planning	5.2958	[4.93-5.66]	4.9519	[4.59-5.31]	0.3439	NS
Innovative employee	5.6000	[5.22-5.97]	5.4487	[5.08-5.81]	0.1512	NS
Entrepreneurial intention	5.0944	[4.68-5.50]	4.8761	[4.47-5.27]	0.2183	NS

Note: NS = not significant (p-value > 0.05), \*p-value < 0.05

TABLE XII  
SURVEY RESULTS FOR VICARIOUS LEARNING EFFECT

Variable	Students with a family model entrepreneur mean (1st sample: n = 98)	95% CI	Students without a family model entrepreneur mean (2nd sample: n = 40)	95% CI	Δ Mean	TΔmean Sig.
Entrepreneurial mindset	4.8741	[4.56-5.17]	5.1917	[4.74-5.64]	-0.3175	NS
Core self-evaluation	5.3510	[5.04-5.65]	5.4700	[5.02-5.91]	-0.1189	NS
Entrepreneurial attitude	4.9660	[4.58-5.34]	4.8500	[4.25-5.44]	0.1159	NS
Teaching methods	4.0374	[3.67-4.39]	4.3583	[3.84-4.86]	-0.3209	NS
Entrepreneurial teachers	4.9660	[4.58-5.34]	4.9500	[4.33-5.56]	0.0159	NS
Entrepreneurial knowledge	5.2449	[4.93-5.55]	5.1500	[4.65-5.64]	0.0949	NS
Creativity	5.0867	[4.76-5.40]	5.2125	[4.78-5.64]	-0.1257	NS
Financial literacy	4.4694	[4.12-4.80]	4.3500	[3.83-4.86]	0.1193	NS
Managing ambiguity	4.8316	[4.56-5.09]	5.1250	[4.71-5.53]	-0.2933	NS
Marshaling of resources	4.9847	[4.66-5.30]	5.2188	[4.79-5.64]	-0.2340	NS
Planning	5.0281	[4.71-5.34]	5.2813	[4.82-5.73]	-0.2531	NS
Innovative employee	5.4830	[5.15-5.81]	5.5917	[5.19-5.98]	-0.1086	NS
Entrepreneurial intention	4.9218	[4.56-5.27]	5.0917	[4.62-5.55]	-0.1699	NS

Note: NS = not significant (p-value > 0.05)

Table VIII shows that there are no significant differences in means between women and men for nine out of 13 variables. For these nine variables, the values of means for the first sample belong to the 95% confidence interval of the variables' means for the second sample. This result implies that the means in both samples do not differ significantly, which is not the case for the four remaining variables. In fact, for these variables, namely "entrepreneurial mindset", "creativity", "marshaling of resources" and "entrepreneurial intention", the values of means for the first sample do not belong to the 95% confidence interval of the variables' means for the second sample which implies that the means in both samples do differ significantly. For these four variables, the signs of the means differences, which correspond to the sign of the t value, are negative. These results indicate that the means for men are significantly greater than those for women. This leads us to conclude that the teaching through entrepreneurship method has approximately the same effect on both gender groups except for "entrepreneurial mindset", "creativity", "marshaling of resources" and "entrepreneurial intention". The results also show a significantly better effect on men for these skills (5.3005, 5.4426, 5.3484, and 5.2951 respectively).

Table IX shows that there are no significant differences in means between FEMT students' and HIMTT ones for eleven out of 13 variables. This result implies that the means in both samples do not differ significantly, which is not the case for the two remaining variables. In fact, for the variables "entrepreneurial attitude" and "financial literacy", the values of means in both samples do differ significantly. The sign of the means differences for these two variables is positive for "financial literacy" and negative for "entrepreneurial attitude". Results indicate that the means for the FEMT students are significantly greater for the former and the means for the HIMTT students are significantly greater for the latter. Hence, the teaching through entrepreneurship method has approximately the same effect on both groups with a significantly better effect on entrepreneurial attitude of the HIMTT students (5.2705 and 4.5942 respectively), and on "financial literacy" for the FEMT students (3.9565 and 4.9130 respectively).

The biggest difference in skills development was seen in work experience (Table X). Indeed, students who already had professional experience developed six entrepreneurial skills better than those who had no experience, namely



“entrepreneurial mindset”, “entrepreneurial knowledge”, “creativity”, “financial literacy”, “innovative employee” and “entrepreneurial intention”. The signs of the means differences are negative which indicates that the differences are in favor of students with work experience (5.2849, 5.5000, 5.4597, 4.8871, 5.8118 and 5.3817 respectively) who had a significantly better effect for them on these variables.

For social work, Table XI shows that there are significant differences in means for three variables between students who had social work and the ones who did not, namely “entrepreneurial mindset” “managing ambiguity” and “marshaling of resources”. The sign of the means differences for these three variables are positive. Results indicate that, for these three entrepreneurial skills, the means for the students with social work experience are significantly greater (5.2556, 5.2083, and 5.3417 respectively).

Table XII corresponding to vicarious learning through family role models shows that there are no significant differences in means between students who had a parent entrepreneur and the ones who did not for all the 13 variables. This result implies that the means in both samples do not differ significantly. Hence, the teaching through entrepreneurship method has approximatively the same effect on both groups.

## V. DISCUSSION AND CONCLUSION

The objective of this research was to identify the effect of teaching through entrepreneurship on the development of students’ entrepreneurial skills by taking into consideration that students are different in gender, in affiliation, in work and social experience, and in the presence in their families of a role model. The finding sheds light on the variation on skills development due to the practical method among Tunisian students.

### A. Discussion

More and more researchers in Tunisian context [7], in similar [64], [65] or in different contexts [66], [67], are being conducted research to illuminate entrepreneurship education [68] and learning [51]. The aim of these studies is to find the best practice in teaching methods that better enables students’ entrepreneurial skills development [7], [69], [70].

Since entrepreneurship was reconceptualized as a mindset that encourages holistic, proactive learners, and entrepreneurship education was considered as a good way to enhance the readiness of young entrepreneurs while they are still studying at university, a wider acceptance outside non-traditional areas and at all levels of education has been generated [10]. In Tunisian context, entrepreneurship education is generalized to all students regardless of their specialties.

The teaching through method is likely to better develop students’ entrepreneurial skills [7], [10]. The purpose of this study is to identify whether this teaching method has the same effect on students who followed different curricular, had different gender, different level in work and social experience, and who had or not role models in their families.

The result of this study (Table XIII) showed that when taking into consideration these different variables, the effect changes among the two samples of students. In fact, while there are no

significant differences in entrepreneurial skills development between the two samples when entrepreneur role models are taken into consideration (H5 rejected), work experience developed better six entrepreneurial skills for those who had the opportunity get it (H1 partially supported). for the rest of the variables, the differences are either a better development of two skills, as in the case of affiliation (H3 supported), or three skills for the case of considering social work (H2 partially supported) or four skills when taking gender into consideration (H4 supported).

TABLE XIII  
 RESULT OF HYPOTHESIS TESTING

Hypothesis	Variable taken into consideration	Number of differences among the groups	Decision
H1	Work experience	6 differences	Partially Supported
H2	Social work	3 differences	Partially Supported
H3	Affiliation	2 differences	Supported
H4	Gender	4 differences	Supported
H5	Vicarious learning through family role models	No differences	Rejected

As such, our study suggested that teaching through entrepreneurship, when combined with a previous work experience, develops better students’ entrepreneurial mindset, entrepreneurial knowledge, creativity, financial literacy, innovative employee, and entrepreneurial intention. In fact, experience is considered as an important factor in developing student’s entrepreneurial mindset especially when it is in the specific industry sector of the proposed business venture [71]. Reference [72] stated that work experience plays a key role in developing students’ entrepreneurial knowledge. In fact, this experience influences, among others, the expectations, and the perceptions of the individual’s intention toward entrepreneurial behavior [73], [74]. Consequently, individuals transform their prior work experience in the context of entrepreneurship education into valuable knowledge [75]. According to the relationship between work experience and financial literacy, a study conducted by [76] stated that students who have work experience develop better their financial literacy because they must have prior exposure to personal finance. As for the innovative employee, the fusion of work experience and entrepreneurial knowledge gained from teaching entrepreneurship enhances their entrepreneurial skills more effectively [77]. In fact, related industries working experience and successful entrepreneurial experience can provide entrepreneurs with valuable tacit knowledge [78] which can make them understand effectively about industry trends, products, market and mission-critical in entrepreneurship processes, so they can promote the emergency of new ideas to solve work problems [79]. For the entrepreneurial intention, [80] stated that work experience has a catalytic influence on this entrepreneurial skill. In fact, work experience increases the likelihood of individuals becoming nascent entrepreneurs [81], [82].

For the social work, a prior experience in this field when combined with learning entrepreneurship through doing it

enhances students' entrepreneurial mindset, managing ambiguity and marshaling of resources. In fact, according to the study conducted by [83] on social work, individuals making this work are making a praiseworthy and important effort to improve the status of their vocation. They are aware about the fact that their position is one of great responsibility that needs to possess knowledge, skill, and power of judgment. This is why they are always looking for opportunities to develop their skills, and when the opportunity arises, they seize it without hesitation. In the context of social work, resources are scarce, that is why social workers possess and develop the skill in utilizing whatever resources are available [83]. As for ambiguity, it is part of social work where workers deal daily with messy and complex social problems [84]. This explains why they develop better their managing ambiguity skill.

Regarding the effect of teaching method considering student affiliation, our study showed that this teaching method helped economic/finance students and medical biotechnology/biomedical engineering students develop their entrepreneurial skills which is in line with the widely endorsed view that entrepreneurship education based on experience and action-oriented programs develops better students' entrepreneurial skills [7], [10], [85], [86]. In fact, we found that there is no significant difference of means between FEMT students and HIMTT ones related to entrepreneurial skills development except for financial literacy and entrepreneurial attitude.

As for financial literacy, our study showed the existence of a significant difference between the two samples for this skill with a better range of FEMT students compared to HIMTT ones. This can be explained by the fact that the FEMT sample is mostly composed of students of finance (71%) who were already taught modules that develop this skill, and that the teacher dedicated a session where she made them work to develop the financial side of their business. According to the entrepreneurial attitude, the mean values show a better range of HIMTT students. Defined as the individual's attitude toward his/her own capability to successfully perform various entrepreneurial activities [5], this result can be explained by the fact that these scientific students who succeeded to develop a functional prototype of their idea has more confidence on the chance of transforming their idea into a business. As we already explained, the course structure focused a lot for these students on the improvement of their prototype as they do not master the managerial aspect of the business. As for FEMT students', we can consider that the technical aspect is their main weakness.

The results related to the gender effect showed that men develop better their entrepreneurial mindset, their creativity, the marshaling of resources, and their entrepreneurial intention than women when having an education through entrepreneurship program. Regarding the development of entrepreneurial mindset, the lack of confidence in their abilities make that women are more likely than men to limit their ultimate career choices [87], and women, in particular, avoid entrepreneurial careers because they think they lack the required skills [88]. But with the training session they follow and the teaching through entrepreneurship programs, women are enhancing their entrepreneurial skills as for the nine

remaining ones where there were no significant differences between women and men. We must work further to develop better women's entrepreneurial mindset so that they can develop it at the same level than men. The dominance of a masculine stereotype associated with entrepreneurship may lead to consider that men are more creative than women [89]. And although research regarding gender and creativity is not conclusive, there is a body of literature that suggests that counterstereotype manipulation can positively influence both cognitive flexibility and creativity [90] and be in favor of women [91]. A lot of work is to be done to get this desired effect. We can say the same for entrepreneurial intention since, for [92], women generally have lower ones.

Finally, we found no significant differences in developing entrepreneurial skills by the vicarious learning through family role model between the two samples. This can be explained by the fact that even if the presence of a high-performing parent entrepreneur had a positive impact on an individual's choice of an entrepreneurial career [52], role models do not necessarily have to be parents. Young people can easily find a role model in social media platforms [93]. The most important thing is that a role model always must be relevant and believable for the situation in which the individual finds himself or herself in [94].

An overall positive assessment of this study can be made, with indications of the importance of teaching entrepreneurship by practicing further activities in developing students' entrepreneurial skills regardless their gender, their affiliation, their prior experience in work or in social work and the presence of family role models.

Even if the sample is not large enough to generalize our finding, but this experiment supports the importance of the decision to generalize entrepreneurship education for students with different profiles to develop their entrepreneurial skills. Learning through action shows its virtues especially when combined with prior professional experience that can be made through internships. Developing social work inside the university is of great importance. It nurtures students' sense of belonging to the faculty and develops their entrepreneurial skills. One of the important results is that women also develop their entrepreneurial skills in the same way as men, but more work needs to be done to further develop their entrepreneurial mindsets, creativity, and intentions. Inviting real entrepreneurs to share their experiences with students and encouraging students to follow entrepreneurs on social networks allow everyone to develop their vicarious learning.

### *B. Conclusion*

The aim of this study was to assess the effect of teaching through entrepreneurship on the development of students' entrepreneurial skills by comparing two students' samples according to gender, affiliation, work experience, social work, and vicarious learning through family role models. We measured the development of thirteen entrepreneurial skills considered as essential to enable entrepreneurs to go through different stages in entrepreneurial ventures and to meet different challenges [61], [62]. Our study may help teachers to choose the best practices for developing their students'

entrepreneurial skills and give support to the decision to generalize the teaching of entrepreneurship to all students.

The main contribution of this paper is to shed light on the effect of teaching through entrepreneurship on the development of students' entrepreneurial skills. It also provides evidence for the importance of the action-oriented approach in entrepreneurship education and highlights its advantages in developing students' entrepreneurial skills regardless of their affiliation, and vicarious learning through family role models. Gender, work experience, and social work enhance the development of specific entrepreneurial skills, we may pay special attention to these factors and their effects in order to, among other goals, reduce the gender gap.

Thus, the paper is in line with the studies that attempt to assess entrepreneurship education programs in Tunisia and emphasizes the potential benefits of an action-oriented approach. The results suggest generalizing the teaching through entrepreneurship programs, as they indicate a high impact on the development of students' entrepreneurial skills.

Our findings suggest that teaching entrepreneurship with practice is a better way to develop students' entrepreneurial skills. We recommend developing more activities for women to have more confidence on themselves, to develop further their creativity and their marshaling of resources skills which impact their entrepreneurial intention. Encouraging students to be involved in social work and to gain work experience in the field they want to launch their businesses is a good way to develop their skills. Giving them the opportunity to meet real entrepreneurs or encouraging them to follow them on social media is also a good way to develop their entrepreneurial skills through practical teaching programs.

#### REFERENCES

[1] Fayolle A and Gailly B (2008) From craft to science. *Journal of European Industrial Training* vol 32, pp. 569–593.

[2] Stamboulis, Y., and A. Barlas. (2014) "Entrepreneurship Education Impact on Student Attitudes." *The International Journal of Management Education* vol 12, no 3, pp. 365–73.

[3] Neck HM and Corbett AC (2018) The scholarship of teaching and learning entrepreneurship. *Entrepreneurship Education and Pedagogy* vol 1, no 1, pp. 8–41.

[4] Witold Nowiński, Mohamed Yacine Haddoud, Drahoslav Lančarić, Dana Egerová & Csilla Czeglédi (2017): The impact of entrepreneurship education, entrepreneurial self-efficacy and gender on entrepreneurial intentions of university students in the Visegrad countries, *Studies in Higher Education*, DOI: 10.1080/03075079.2017.1365359.

[5] Moberg K, Vestergaard L, Fayolle A, et al. (2014) How to Assess and Evaluate the Influence of Entrepreneurship Education. A Report of the ASTEE Project with a User Guide to the Tools. Denmark: The Danish Foundation for Entrepreneurship – Young Enterprise Ejlskovsgade.

[6] Lackeus M (2015) Entrepreneurship in Education: what, why, when, how. *Entrepreneurship* 360. Background paper. Available at: [www.oecd.org/](http://www.oecd.org/) (accessed 31 January 2022).

[7] Chaker H and Jarraya H (2021) Combining teaching "about" and "through" entrepreneurship: a practice to develop students' entrepreneurial competencies. *Industry and Higher Education*, vol 35, no 4, pp. 432–442. DOI: 10.1177/0950422221991005

[8] Boutaky S and Eddine AS (2022) Determinants of entrepreneurial intention among scientific students: a social cognitive theory perspective. *Industry and Higher Education* vol 0, no 0, pp. 1–15. DOI: 10.1177/0950422221120750

[9] Chaker, H. and Dellaji, H. (2022). Combining teaching "about" and "through" entrepreneurship: A practice to develop students' entrepreneurial competencies, *Industry and Higher Education*, Vol. 0, no

0, pp. 1–23, DOI: 10.1177/0950422221146426

[10] O'Brien, E and Hambourg, I (2019). A critical review of learning approaches for entrepreneurship education in a contemporary society, *European Journal of education, research, development, and policy*, vol 54, no 4, p-p. 525-537, <https://doi.org/10.1111/ejed.12369>

[11] Cope J (2005) Toward a dynamic learning perspective of entrepreneurship. *Entrepreneurship Theory and Practice*, no 29, pp. 373–397.

[12] Minniti M and Bygrave W (2001) A dynamic model of entrepreneurial learning. *Entrepreneurship Theory and Practice* vol 26, no 3, pp. 5–16.

[13] Gartner WB (1988) Who is an entrepreneur? Is the wrong question. *Am J Small Bus*, no 12, pp. 11–32.

[14] Burgoyne, J. G. (1995). *Learning From Experience: From Individual Discovery to Meta-dialogue via the Evolution of Transitional Myths*. *Personnel Review* vol 24, no 6, pp. 61–72.

[15] Pavlica, K., Holman, D., and Thorpe, R. (1998). *The Manager as a Practical Author of Learning*. *Career Development International*, vol 3, no 7, pp. 300–307.

[16] Lave, J. and Wenger, E. (1991). *Situated Learning: Legitimate Peripheral Participation*. Cambridge: Cambridge University Press.

[17] Mäkinen, H. (2002). Intra-firm and inter-firm learning in the context of start-up companies. *International Journal of Entrepreneurship and Innovation*, vol 3, no 1, 35–43.

[18] Boussouara, M. and Deakins, D. (1999). Market-based learning, entrepreneurship, and the high technology small firm. *International Journal of Entrepreneurial Behaviour & Research*, vol 5, pp. 204–223.

[19] Bandura, A. (1977). *Social learning theory*. Englewood Cliffs: Prentice-Hall.

[20] European Commission. (2011). *An agenda for the modernisation of Europe's higher education systems COM (2011)*. Luxembourg, Communication from the Commission to the European Parliament, the Council, the European and Social Committee and the Committee of Regions Supporting growth and jobs Luxembourg 2011. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52011DC0567&from=en>

[21] Bacigalupo, M., Kamyliis, P., Punie, Y., & Van den Brande, G. (2016). *EntreComp: The entrepreneurship competence framework*. Luxembourg: Publication Office of the European Union.

[22] European Commission. (2000). *Communication from the Commission to the Council, the European Parliament, the European Economic and Social committee, and the Committee of the Regions—Implementing the Community Lisbon Programme: Fostering entrepreneurial mindsets through education and learning*. Retrieved from <https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX:52006DC0033>

[23] European Commission. (2016). *A New Skills Agenda for Europe: Working together to strengthen human capital, employability and competitiveness*, Communication from the Commission to the European Parliament, the Council, the European and Social Committee and the Committee of Regions, Brussels, 2016. Retrieved from <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52016DC0381>

[24] Iyigun, N. O. (2015). What could entrepreneurship do for sustainable development? A corporate social responsibility-based approach. *Procedia-Social and Behavioral Sciences*, vol 195, pp. 1226.1231. <https://doi.org/10.1016/j.sbspro.2015.06.253>

[25] Sirelkhatim F and Gangi Y (2015) Entrepreneurship education: a systematic literature review of curricula contents and teaching methods. *Cogent Business and Management*, vol 2, no 1, pp. 1–12. DOI: [org/10.1080/23311975.2015.1052034](https://doi.org/10.1080/23311975.2015.1052034).

[26] Dabbagh N and Menascé D A (2006) Student Perceptions of Engineering Entrepreneurship: An Exploratory Study. *Journal of Engineering Education*, vol 95, no2, pp. 153-164, <https://doi.org/10.1002/j.2168-9830.2006.tb00886.x>

[27] Hoppe, M. (2016). Policy and entrepreneurship education. *Small Business Economics*, vol 46, pp. 13–29. <https://doi.org/10.1007/s11187-015-9676-7>

[28] Jamieson I (1984) *Education for Enterprise*. Cambridge: Ballinger.

[29] Ciobotaru, A. C. (2013). Entrepreneurial education as a society project. An essay on the conceptualization of the spirit of initiative and entrepreneurship in the educational field. *Review of Economic Studies and Research Virgil Madgearu*, vol 6, pp. 41–76.

[30] Vincett P and Farlow S (2008) Start-a-business: an experiment in education through entrepreneurship. *Journal of Small Business and Enterprise Development* vol 15, pp. 274–288.

[31] Chang J and Rieple A (2013) Assessing students' entrepreneurial skills development in live projects. *Journal of Small Business and Enterprise*

- Development, vol 20, pp. 225–241.
- [32] Lave, J. (1993), "The practice of learning", in Chaiklin, S. and Lave, J. (Eds), *Understanding Practice: Perspectives on Activity and Context*, Cambridge University Press, Cambridge, pp. 3-32.
- [33] Billett, S. (1999a), "Guided learning in the workplace", in Boud, D. and Garrick, J. (Eds), *Understanding Learning at Work*, Routledge, London.
- [34] Rogoff, B. (1990), *Apprenticeship in Thinking ± Cognitive Development in Social Context*, Oxford University Press, New York, NY.
- [35] Rogoff, B. (1995), "Observing sociocultural activities on three planes: participatory appropriation, guided appropriation, and apprenticeship", in Wertsch, J.V., Del Rio, P. and Alvarez, A. (Eds), *Sociocultural Studies of the Mind*, Cambridge University Press, Cambridge, pp. 139-64.
- [36] Billett, S. (2001), "Learning through work: workplace affordances and individual engagement", *Journal of Workplace Learning*, Vol. 13, no 5, pp. 209 - 214.
- [37] Guile, D and Griffiths, T (2001), *Learning Through Work Experience*, *Journal of Education and Work*, vol 14, no 1, pp. 113-131, DOI:10.1080/13639080020028738
- [38] Reuber, A.R. & Fischer, E. (1999). Understanding the consequences of founders' experience. *Journal of Small Business Management*, vol 37, no 2, pp. 30–45.
- [39] Gockel, A. and Burton, D L (2014). An Evaluation of Prepracticum Helping Skills Training for Graduate Social Work Students, *Journal of Social Work Education*. Vol 50, pp. 101-119, DOI: 10.1080/10437797.2014.856234
- [40] Ladany, N. (2007). Does psychotherapy training matter? Maybe not. *Psychotherapy: Theory, Research, Practice, Training*, vol 44, pp. 392-396. doi:10.1037/0033-3204.44.4.392
- [41] Hackett, S, Kuronen, M, Matthies, A L, and Kresal B (2003). The motivation, professional development, and identity of social work students in four European countries, *European Journal of Social Work*, vol 6, no2, pp. 163-178, DOI: 10.1080/1369145032000144421
- [42] Plaschka, G. R., & Welsch, H. P. (1990). Emerging structures in entrepreneurship education: Curricular designs and strategies. *Entrepreneurship Theory and Practice*, vol 14, pp. 55–71. <https://doi.org/10.1177/104225879001400308>
- [43] Zaltman, G. (2003). *How customers think: Essential insights into the mind of the market*. Boston, MA: Harvard Business Press.
- [44] Bae, T.J., Qian, S., Miao, C., and Fiet, J.O. (2014), "The relationship between entrepreneurship education and entrepreneurial intentions: a meta-analytic review", *Entrepreneurship Theory and Practice*, vol. 38, no. 2, pp. 217-254.
- [45] Thébaud, S. (2010). "Gender and Entrepreneurship as a Career Choice: Do Self-assessments of Ability Matter?" *Social Psychology Quarterly*, vol 73, no 3, pp. 288–304.
- [46] Wilson, F., J. Kickul, and D. Marlino. (2007). "Gender, Entrepreneurial Self-Efficacy, and Entrepreneurial Career Intentions: Implications for Entrepreneurship Education." *Entrepreneurship Theory and Practice*, vol 31, no 3, pp. 387–406.
- [47] Voit, J.R. & Drury, C.G. (2006), "Supporting vicarious learning with collaborative lessons learned programs", *IEEE: Transactions on Systems, Man, and Cybernetics – Part A: Systems and Humans*, vol 36, no 6, pp. 1054-1062.
- [48] Cox, R., McKendree, J., Tobin, R., Lee, J. and Mayes, T. (1999), Vicarious learning from dialogue and discourse. *Instructional Science*, vol 27, pp. 431–458.
- [49] Fox F.F. (2003), Reducing intercultural friction through fiction: virtual cultural learning, *International Journal of Intercultural Relations*, vol 27, pp. 99–123.
- [50] Roberts, D. (2010), "Vicarious learning: A review of the literature." *Nurse Education in Practice*, vol 10, pp. 13-16.
- [51] Yeardon-Lee, A. (2018), "Reflective vicarious learning (RVL) as an enhancement for action learning", *Journal of Management Development*, vol. 37, no. 4, pp. 363-371. <https://doi.org/10.1108/JMD-11-2017-0348>
- [52] Scherer, R.F., Adams, J.S., Carley, S.S., & Wiebe, F.A. (1989). Role model performance effects on development of entrepreneurial career preference. *Entrepreneurship Theory and Practice*, Spring, pp. 53–71.
- [53] Betz NE, Hackett G (1981) The relationship of career-related self-efficacy expectations to perceived career options in college women and men. *J Couns Psychol*, vol 28, pp. 399–410
- [54] J. D., Mitchell, A. M., & Jones, G. B. (1976). A social learning theory of career selection. *The Counseling Psychologist*, vol 6, pp. 71-80.
- [55] Carsrud, A. L., Olm, K. W., & Eddy, G. G. (1986). *Entrepreneurship: Research in quest of a paradigm*. In D. L. Sexton & R. W. Smilor (Eds.), *The art and science of entrepreneurship*. Cambridge, MA: Ballinger Publishing Company.
- [56] Sexton, D. L. (1987). Advancing small business research: Utilizing research from other areas. *American Journal of Small Business*, vol 11, pp. 25-30.
- [57] Wortman, M. S. (1987). Entrepreneurship: An integrating typology and evaluation of empirical research in the field. *Journal of Management*, vol 13, pp. 259-279.
- [58] Mwasalwiba, ES (2010) Entrepreneurship education: a review of its objectives, teaching methods, and impact indicators. *Education + Training*, vol 52, 20–47.
- [59] Williams D (2015) The impact of SimVenture on the development of entrepreneurial skills in management students. *Industry and Higher Education* vol 29, no 5, pp. 379–395.
- [60] Kuratko D and Hodgetts R (2004) *Entrepreneurship: Theory, Process, Practice*. Ohio: South-Western College Publishers.
- [61] Shane, S. and Venkataraman, S. (2000). The Promise of Entrepreneurship as a Field of Research. *Academy of Management Review*, vol 25, no1, 217–226.
- [62] Stevenson H, Roberts M and Grousbeck H (1985) *New Business Ventures and the Entrepreneur*. Burr Ridge, IL: RichardD. Irwin.
- [63] Messen K and Saadaoui S (2020) The effect of entrepreneurial education on students' career ambitions conducting ASTEE Questionnaire in Algerian Universities. *European Journal of Business and Management Research*, vol 5, no 3, pp. 1–5. DOI: 10.24018/ejbm.2020.5.3.242.
- [64] Boubker, O., Arroud, M., and Ouajdouni, A. (2021). Entrepreneurship education versus management students' entrepreneurial intentions. A PLS-SEM approach. *The International Journal of Management Education*, vol 19, 100450, <https://doi.org/10.1016/j.ijme.2020.100450>.
- [65] Messen K and Saadaoui S (2020) The effect of entrepreneurial education on students' career ambitions conducting ASTEE Questionnaire in Algerian Universities. *European Journal of Business and Management Research*, vol 5, no 3, pp. 1–5. DOI: 10.24018/ejbm.2020.5.3.242.
- [66] Hocenski, M., Sedlan-König, L. & Turjak, S. (2019). Entrepreneurial education - exploring teachers' creativity in 11 countries. *Ekonomski Vjesnik, God. XXXII, BR. 1/2019. str. 23-35*.
- [67] Shi, Y., Yuan, T., Bell, R., & Wang, J. (2020). Investigating the Relationship Between Creativity and Entrepreneurial Intention: The Moderating Role of Creativity in the Theory of Planned Behavior. *Frontiers In Psychology*. 11: 1209. doi: 10.3389/fpsyg.2020.01209.
- [68] Liguori, L., Corbin, R., and Lackeus, M., (2019). Under-researched domains in entrepreneurship and enterprise education: primary school, community colleges and vocational education and training programs. *Journal of Small Business and Enterprise Development*, vol 26, no 2, pp. 182–189.
- [69] Balan, P., & Metcalfe, M. (2012). Identifying teaching methods that engage entrepreneurship students. *Education & Training*, vol 54, no 5, pp. 368–384.
- [70] Peltonen, K. (2015). How can teachers' entrepreneurial competences be developed? A collaborative learning perspective. *Education þ Training*, vol 57, no 5, pp. 492–511.
- [71] Neneh, B. (2012). An exploratory study on entrepreneurial mindset in the small and medium enterprise (SME) sector: A South African perspective on fostering small and medium enterprise (SME) success. *African Journal of Business Management*, vol 6, no 9, pp. 3364-3372, <http://www.academicjournals.org/AJBM> DOI: 10.5897/AJBM10.1631
- [72] Miralles, F., Giones, F. and Riverola, C. (2016), "Evaluating the impact of prior experience in entrepreneurial intention", *International Entrepreneurship and Management Journal*, vol. 12 no. 3, pp. 791-813.
- [73] Kautonen, T., Luoto, S. and Tornikoski, E.T. (2010), "Influence of work history on entrepreneurial intentions in 'prime age' and 'third age': a preliminary study", *International Small Business Journal*, vol. 28, no. 6, pp. 583-601.
- [74] Carr, J.C. and Sequeira, J.M. (2007), "Prior family business exposure as intergenerational influence and entrepreneurial intent: a theory of planned behavior approach", *Journal of Business Research*, vol. 60, no. 10, pp. 1090-1098.
- [75] Politis, D. (2008), "Does prior start-up experience matter for entrepreneurs' learning? A comparison between novice and habitual entrepreneurs", *Journal of Small Business and Enterprise Development*, vol. 15, no. 3, pp. 472-489.
- [76] Chen, H and Volpe R P (1998). An Analysis of Personal Financial Literacy Among College Students, *Financial Services Review*, vol 7, no 2, pp. 107-128
- [77] Long, D. and Dong, N. (2017), "The effect of experience and innovativeness of entrepreneurial opportunities on the new venture

- emergence in China: The moderating effect of munificence", *Journal of Entrepreneurship in Emerging Economies*, vol. 9 no. 1, pp. 21-34. <https://doi.org/10.1108/JEEE-04-2016-0014>
- [78] Davidsson, P., Honig, B. (2003). "The role of social and human capital among nascent entrepreneurs", *Journal of Business Venturing*, 2003, vol. 18, no. 3, pp. 301-331.
- [79] Delmar, F., Shane, S. (2006). "Does experience matter? The effect of founding team experience on the survival and sales of newly founded ventures", *Strategic Organization*, vol. 4, no. 3, pp. 215-247.
- [80] Bignotti, A. and le Roux, I. (2020), "Which types of experience matter? The role of prior start-up experiences and work experience in fostering youth entrepreneurial intentions", *International Journal of Entrepreneurial Behavior & Research*, vol. 26, no. 6, pp. 1181-1198. <https://doi.org/10.1108/IJEER-10-2019-0577>
- [81] Kemelgor, B.H., D'Souza, R. and Henley, G. (2011), "The dynamics of entrepreneurial entry and firm performance of first career and second career entrepreneurs as mediated by prior knowledge", *Southern Journal of Entrepreneurship*, vol. 4, no. 2, pp. 18-45.
- [82] Mueller, P. (2006), "Entrepreneurship in the region: breeding ground for nascent entrepreneurs?", *Small Business Economics*, vol. 27, no. 1, pp. 41-58.
- [83] Flexner, A (2001). Is Social Work a Profession? *Research on Social Work Practice* vol 11, pp. 152- 165, DOI: 10.1177/104973150101100202
- [84] Beddoe, L., Staniforth, B. L., and Fouché, C. B. (2019). 'Proud of what I do but often...I would be happier to say I drive trucks': Ambiguity in social workers' self-perception. *Qualitative Social Work*, vol 18, no 3, pp. 530-546. <https://doi.org/10.1177/1473325017725801>
- [85] Cope J and Watts G (2000) Learning by doing: an exploration of experience, critical incidents, and reflection in entrepreneurial learning. *International Journal of Entrepreneurial Behavior and Research*, vol 6, pp. 104-124.
- [86] Rae D and Carswell M (2000) Using a life-story approach in researching entrepreneurial learning: the development of a conceptual model and its implications in the design of learning experiences. *Education þ Training* vol 42, no 4/5, pp. 220-228.
- [87] Bandura A (1994) Self-efficacy. In: Ramachandran VS (ed) *Encyclopedia of human behavior*. Academic Press, New York, pp 71-81
- [88] Chen CC, Greene PG, Crick A (1998) Does entrepreneurial self-efficacy distinguish entrepreneurs from managers? *J Bus Ventur*, vol 13, pp. 295-316
- [89] Gupta, V. K., Goktan, A. B. and Gunay, G. (2014), "Gender differences in evaluation of new business opportunity: A stereotype threat perspective", *Journal of Business Venturing*, vol 29 no. 2, pp. 273-288.
- [90] Gocłowska, M. A., Crisp, R. J. and Labuschagne, K. (2013), "Can counter-stereotypes boost flexible thinking?", *Group Processes & Intergroup Relations*, vol. 16, no. 2, pp. 217-231.
- [91] Smith, R.M., Sardeshmukh, S.R. and Combs, G.M. (2016), "Understanding gender, creativity, and entrepreneurial intentions", *Education + Training*, vol 58, no 3, pp. 263-282. <https://doi.org/10.1108/ET-06-2015-0044>
- [92] Nowiński, W, Haddoud, M Y, Lančarič, D, Egerová, D and Czeglédi, C. (2019) The impact of entrepreneurship education, entrepreneurial self-efficacy, and gender on entrepreneurial intentions of university students in the Visegrad countries, *Studies in Higher Education*, vol 44, no 2, pp. 361-379, DOI: 10.1080/03075079.2017.1365359
- [93] Chaker, H., & Zouaoui, S. (2023). Meeting the Challenge of Entrepreneurship with social media: The Case of Tunisian Women Entrepreneurs. *Journal of Entrepreneurship and Innovation in Emerging Economies*, vol 9, no 1, pp.33-61. <https://doi.org/10.1177/23939575221138439>
- [94] Mauer, R., Neergaard, H., Linstad, A.K. (2017). Self-Efficacy: Conditioning the Entrepreneurial Mindset. In: Brännback, M., Carsrud, A. (eds) *Revisiting the Entrepreneurial Mind*. *International Studies in Entrepreneurship*, vol 35. Springer, Cham. [https://doi.org/10.1007/978-3-319-45544-0\\_19](https://doi.org/10.1007/978-3-319-45544-0_19)