

## ROLE OF ENTREPRENEURSHIP DEVELOPMENT ON DISSEMI- NATION OF THE CULTURE AND CONCEPT OF CREATIVITY: A STUDY OF THE STUDENTS OF JORDAN UNIVERSITY OF SCI- ENCE AND TECHNOLOGY

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### **Abstract**

This study aimed to recognize the role of entrepreneurship and innovation course in the establishment and dissemination of the culture and concept of entrepreneurship and creativity among students of Jordan University of Science and Technology. The study sample consisted of 1,258 male and female students. The results show that the average responses of the students to the scale paragraphs as a whole were “agree”. It was noted that the average of all the statements is greater than 3.39 and in all three main dimensions of the scale. They constitute Dimension I: Gaining a culture of entrepreneurship and innovation; Dimension II: Developing creativity and innovation in entrepreneurship; Dimension III: Scientific and practical methods applied in the implementation of Pioneering Projects. The results show that there are no statistically significant differences ( $\alpha=0.05$ ) at the level of students' responses on the extent to which the culture of entrepreneurship and innovation was acquired, and to the extent the scientific and practical methods were applied in the implementation of Pioneering Projects due to the gender and the level of study. On the other hand, the results indicated that there are statistically significant differences ( $\alpha=0.05$ ) at the level of students' responses to innovation and creativity in entrepreneurship according to gender and the level of study.

### **Research paper**

**Keywords:** Course; Entrepreneurship; Innovation; Pioneering culture

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## **Introduction**

Global entrepreneurship has become a top priority for governments, economic institutions, and planners. This is due to its many advantages, notably the achievement of a comprehensive economic and social development, rapid wealth, and jobs creation in a bid to achieve sustainable development by creating qualified and globally competitive generations. Albagore (2017) highlighted huge technological developments, globalization, and the increasing role of knowledge, especially with the transition to a knowledge economy. This can be seen in terms of control and leadership of entrepreneurship projects and innovation strategies on global economic and community development programs. Two decades ago, those keen on providing economic stability to societies realized that entrepreneurship education was one of the ways to help. Entrepreneurship courses, educational and training programs, began to appear among the curricula of many universities in many countries of the world (Guerrero et al., 2014, 2015). It has also helped in disseminating the culture of entrepreneurship and transforming it into a reality embodied in the form of projects and products of one of the main areas of education, training, and professional studies in the field of entrepreneurship (Eid, 2014).

The field of entrepreneurship has become one of the main pillars of the public and university education system since the beginning of the nineteenth and the twentieth century. Entrepreneurship education programs have achieved remarkable growth over the last 20 years. The number of colleges that study entrepreneurship courses and programs has grown, and various

business departments have been established. Consequently, this has increased the number of organizations, institutions, centers, and scientific journals that are specialized in entrepreneurship (Abel & Abu Qarn, 2015; Eid, 2014; Katz, 2002; Robinson & Haynes, 1991). This has resulted in the remarkable success achieved by developed countries in the field of the education and incubation of entrepreneurs. It is incumbent on us to keep pace with developed countries in entrepreneurship education in order to build a generation of entrepreneurs capable of contributing to economic and social security (Abdelkader & Ibrahim, 2015). Therefore, many Arab universities have adopted entrepreneurship education projects for their application. Thus, this includes the inclusion of entrepreneurship and innovation courses, the construction of incubators, and accelerating it in universities to embrace innovative innovators. This basically is in addition to holding conferences, seminars, workshops, and competitions in order to spread the culture of entrepreneurship, as well as the use of successful experts and entrepreneurs to transfer their experiences in the development of education for leadership and innovation. A group of researchers conducted a series of evaluation research studies, which attempted to evaluate some of the experiences and programs that dealt with entrepreneurship in the Arab world, most especially in education and training. The most important of these studies was the study of Alarmede (2018) which aimed at evaluating the role of the Egyptian universities in developing the culture of entrepreneurship among students, as well as the obstacles they are faced with. The number of sample members was 891 faculty members and administrators in Egyptian universi-

ties. The study shows that there is a lack of the role of universities in developing a culture of entrepreneurship among students in all areas including vision, mission and strategy, leadership and governance, resources and infrastructure, education for leadership, university support, internationalization and external university relations, and evaluation of entrepreneurship.

The study of Saad Abu Qarn (2015) identified the situation of entrepreneurship in Palestinian universities by making a comparison between Community Service and Continuing Education Deanship (CSCED) in the Islamic University of Gaza and Continuing Education Center (CEC) in Al Azhar University. The study sample included 200 students of CSCED and CEC. The results showed that creativity, innovation, calculated risk, independence, competitiveness, and entrepreneurship culture have an average role on entrepreneur tendency in CSCED. Meanwhile, such factors have a slight effect on the same tendency in CEC. Al-Makhlafi (2014) stated the reality of learning entrepreneurship in public universities in Saudi Arabia. Therefore, this study aimed to analyze the reality of pioneering learning in the Saudi government universities and the availability of an entrepreneurial environment for entrepreneurship as well as professors in the field of entrepreneurship. The study revealed that the area of learning entrepreneurship in universities in Saudi Arabia is still small and modest. Additionally, the percentage of specialists in the field of entrepreneurship of the teaching staff is almost nonexistent (Radovic Markovic and Salamzadeh, 2012). This study also recommended the importance of expanding entrepreneurship and establishing centers that are independent.

Al-Kasasbeh (2008) study entitled “Preparing for Entrepreneurship: An exploratory study on business administration students at the University of Petra in Jordan” was aimed at measuring the degree of the preparation for Entrepreneurship for business students at Petra University. The study revealed that 48.4% of the respondents were well informed about Entrepreneurship, while 49.3% of students lack orientation about Entrepreneurship. Hence, their level of Entrepreneurship is low. The study also found that there were no significant differences between the responding students due to gender, age, or academic year. Furthermore, the study recommended that the university administration and decision makers should encourage the establishment of a business incubator at the college to train students and enable them to apply for their pioneering work.

From the theoretical point of view the Need for Achievement Theory (NAT): This is a psychological theory propounded by David McClelland (1965), he argued that there is a strong functional relationship between need for achievement, economic development, and entrepreneurial activities. According to the proponent of the theory- McClelland (1956), he clarified that there would be rather a larger size of entrepreneurial pursuit in the society; where on the average, need for achievement is reasonably high. The consequence of this theory is that when learners are properly inspired to have a high need for achievement in life via entrepreneurship education, there is a high likelihood for them to establish their own enterprise after graduation.

The Jordan University of Science and Technology is characterized by the level of the Arab world at the local level based on the adoption of the

idea of entrepreneurship and innovation through many programs, activities, events, and initiatives. Moreover, the Jordan University of Science and Technology was one of the first universities to adopt the course of entrepreneurship and innovation. This began through the Department of Humanities at the Faculty of Science and Arts and finally extended to all students regardless of their specialties or Program Specialization. Furthermore, there was an establishment of incubator and business accelerator within its campus at the Center for Excellence for Creative Projects. They are aimed at organizing many conferences, forums, and competitions related to leadership, creativity, and innovation.

### **Definition of Entrepreneurship and Innovation Course Symbolized as HSS 119: An Introductory Academic Course on Entrepreneurship and Innovation**

Consequently, this is regarded as one of the courses under the umbrella of e-learning at the university. The course is compulsory for all academic majors at the bachelor's level with two accredited hours. The course offers an introduction to entrepreneurship and creativity. The overall objective of the course is to help students evaluate their work skills, commit them to run a pilot project successfully, and review their entrepreneurial challenges. Students will also learn about themselves, their decisions and goals to determine how entrepreneurship can play a significant role in their working lives. Students will gain a lot of economic concepts, environmentally sustainable practices, and social entrepreneurship. They will also learn a range

of ways to enhance their creativity. The course is a program conducted through the "E-Learning" platform. (<http://www.just.edu.jo>)

This section provides an overview of the structure and composition of the study with a summary composition of each chapter. The study is divided and organized into six sections with various sub-headings for the sections. Section one presents the general discussion that provides a background introduction to the study. Section two provides an insight into the major issues that spur the study and discusses the rationale and objectives of the study. Section three presents the methodology adopted in the course of the study, starting the approach taken to conduct this research and methods of data collection and data analysis. Lastly evaluates the various methods used for data analysis.

Section four presents results and analysis of the viability of the role of entrepreneurship development on the dissemination of the culture and concept of creativity. Section five is the segment where the findings from the result are been discuss and compared with the existing body of literature. Section six contains the proposed recommendations concerning the role of entrepreneurship development on the dissemination of the culture and concept of creativity.

### **Statement of the Problem**

From the above, we discovered that various institutions in the world tend to pay more attention to entrepreneurship and encourage young people to adopt entrepreneurship and entrepreneurial projects because of its many

advantages such as economic and social development, wealth creation, job creation, and sustainable development. Universities also play a key role in rehabilitating these young people by developing and building a culture of entrepreneurship and innovation in them. Thus, this serves as a driver and encouragement to them to work and become innovative and excellent. While international universities have been interested in entrepreneurship and have modified their curricula and developed them to introduce entrepreneurship and innovation courses, the situation in the Arab world universities in general, and Jordan in particular, continues to suffer from the apparent lack of support for entrepreneurship and innovation (within the limits of the researchers' knowledge). Through this research, we aimed to demonstrate the role of entrepreneurship and innovation course in the establishment and dissemination of culture and concepts of entrepreneurship and creativity among students of the Jordan University of Science and Technology. Therefore, the current study seeks to answer the following questions:

1. What is the extent to which the culture of entrepreneurship and innovation is acquired among the students of the course?
2. What is the extent of creativity and innovation in the entrepreneurship of the students of the course?
3. What extent are the Scientific and practical methods applied in the implementation of Pioneering Projects among the students of the course?
4. Are there statistically significant differences in the course of entrepreneurship and innovation and their impact on the creation and dis-

semination of culture and concepts of entrepreneurship and creativity level among the students due to gender and the level of the study?

## **Methodology**

This study sample consisted of 1,258 male and female students in the entrepreneurship and innovation course for the first semester of 2018/2019. Thus, the number of male students was 446 (35.45%), while the number of female students was 812 (64.55%). The sample of the study by year was as follows: First-year students constituted 39.7% of the study sample, Second-year students account for 43.5%, while the rest of the years constituted 16.9% of the study sample.

However, the researchers designed a scale to achieve the goal of the research. The scale consists of three main dimensions:

Dimension I: Gaining a culture of entrepreneurship and innovation.

Dimension II: Developing creativity and innovation in entrepreneurship.

Dimension III: Scientific and practical methods applied in the implementation of Pioneering Projects.

The first and second dimensions contain seven statements, while the third dimension contains eight statements. The Likert scale was used to measure the total score of these statements, according to each dimension. This is on a fivefold scale, namely: totally agree, agree, not sure, not agree, totally not agree.

**Virtual Scale Honesty:** This refers to judgment on the virtual scale statements according to its words clarity and meaning in the light of the di-

mension it belongs to. The scale was judged by some specialists in entrepreneurship and creativity, who have indicated the appropriateness of the proposed data for the scale by revising some statements. Also, the stability of the tool was obtained by extracting the stability parameters of the scale used in the internal consistency method by calculating the stability coefficient using the Cronbach-Alpha equation as shown in Table 1 below.

**Table 1.** Cronbach's alpha internal consistency coefficient for the dimensions of the scale as a whole

<b>Dimension</b>	<b>Numbers of Statements</b>	<b>Cronbach Alpha</b>
Gaining a culture of entrepreneurship and innovation	7	0.787
Developing creativity and innovation in entrepreneurship	7	0.748
Scientific and practical methods applied in the implementation of Pioneering Projects	8	0.877
Total	22	0.923

Table 1 shows that stability coefficient values ranged between 0.748 and 0.877 for each dimension. In addition, the total values of stability coefficients for all paragraphs reached 0.923 which are acceptable and indicate the stability of the study. Hence, it is valid to measure what is assigned to its measurement.

## Results

This section includes an overview of the findings of this study. The results were as follows:

**First:** To determine the extent to which students who have studied entrepreneurship and innovation have acquired the culture of entrepreneurship and innovation, the arithmetical mean and the standard deviation of student responses to the statements were calculated in each dimension as shown in Table 2 below.

**Table 2.** Arithmetical mean and standard deviation to determine the extent to which students who have studied entrepreneurship and innovation have acquired the culture of entrepreneurship and innovation

Dimension	Statements	Arithmetical Mean	Standard Deviation	Result
Extent to which the culture of entrepreneurship and innovation were acquired.	Q1	4.08	.758	Agree
	Q2	4.19	.869	Agree
	Q3	4.20	.756	Totally agree
	Q4	3.85	.863	Agree
	Q5	3.91	.975	Agree
	Q6	3.79	.973	Agree
	Q7	4.00	.834	Agree
	Average dimension		4.0	0.86

Table 2 shows the statements in each dimension according to the arithmetic mean. Thus, it was noted that the average of all the statements is

greater than 3.39. This means that the average responses of the students to the paragraphs were “Agree.” Also, all standard deviations of all paragraphs were less than one standard deviation from the arithmetic mean. The highest arithmetic average is the statement Q3. Hence, this means "I become convinced about the importance of entrepreneurship and innovation in building and supporting the national economy" has an arithmetic mean of 4.20.

**Second:** To determine the extent of creativity and innovation in the entrepreneurship of the students for the course, the arithmetical mean and the standard deviation of student responses to the statements were calculated in each dimension as shown in Table 3 below.

**Table 3.** Arithmetical mean and the standard deviation to determine the extent of creativity and innovation in the entrepreneurship course of the students

<b>Dimension</b>	<b>Statements</b>	<b>Arithmetical Mean</b>	<b>Standard Deviation</b>	<b>Result</b>
Determine the extent of creativity and innovation in entrepreneurship.	Q1	4.22	.740	Totally agree
	Q2	4.39	.740	Totally agree
	Q3	4.08	.880	Agree
	Q4	3.91	.827	Agree
	Q5	3.87	.839	Agree
	Q6	3.68	1.031	Agree
	Q7	3.92	.811	Agree
	Average dimension	4.01	0.82	Agree

Table 3 shows the statements in each dimension according to the arithmetic mean. Thus, it was noted that the average of all the statements is greater than 3.39. This means that the average responses of the students to the paragraphs were “Agree.” Also, all standard deviations of all paragraphs were less than one standard deviation from the arithmetic mean. This is an exception for paragraph number 6 which has a standard deviation of 1.

The highest arithmetic average is the statement Q2. Hence, this means "I prefer work that requires creative thinking" has an arithmetic mean of 4.39.

**Third:** To determine the extent of the scientific and practical methods applied in the implementation of Pioneering Projects among the students for the course, the arithmetical mean and the standard deviation of student responses to the statements were calculated in each dimension as shown in Table 4 below.

**Table 4.** Arithmetical mean and the standard deviation to determine the extent scientific and practical methods are applied in the implementation of Pioneering Projects among the students for the course

Dimension	Statements	Arithmetical Mean	Standard Deviation	Result
Extent of Scientific and practical methods applied in the implementation of Pioneering Projects.	Q1	3.64	.974	Agree
	Q2	3.84	.892	Agree
	Q3	3.82	.868	Agree
	Q4	3.90	.879	Agree
	Q5	3.73	.934	Agree
	Q6	3.94	.935	Agree

<b>Dimension</b>	<b>Statements</b>	<b>Arithmetical Mean</b>	<b>Standard Deviation</b>	<b>Result</b>
	Q7	3.63	1.004	Agree
	Q8	3.73	.971	Agree
	Average dimension	3.77	0.91	Agree

Table 4 shows the statements in each dimension according to the arithmetic mean. Thus, it was noted that the average of all the statements is greater than 3.39. This means that the average responses of the students to the paragraphs were “Agree.” Also, all standard deviations of all paragraphs were less than one standard deviation from the arithmetic mean. This is an exception for paragraph number 7 which has a standard deviation of 1.

The highest arithmetic average is the statement Q6. Hence, this means "I have the ability and willingness to make an excellent "presentation" of my entrepreneurial project" has an arithmetic mean of 3.94.

**Fourth:** Are there statistically significant differences at  $\alpha=0.05$  between student’s responses in the course of entrepreneurship and innovation, and their impact on the creation and dissemination of culture and concepts of entrepreneurship and creativity due to gender and the level of study. To answer this question, the t-test was used for two independent samples to examine differences according to the gender variable. Table 5 shows the results.

**Table 5.** t-test for independent samples of differences based on the level of responses of students who studied entrepreneurship and innovation according to the gender variable

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
Extent to which the culture of entrepreneurship and innovation are acquired.	Equal variances assumed	7.314	.007	-1.639	1256	.102
	Equal variances not assumed			-1.563	798.642	.118
Determine the extent of creativity and innovation in entrepreneurship.	Equal variances assumed	5.087	.024	-3.089	1256	.002
	Equal variances not assumed			-2.957	807.168	.003
Extent of the scientific and practical methods applied in the implementation of Pioneering Projects.	Equal variances assumed	10.151	.001	-5.559	1256	.577
	Equal variances not assumed			-5.532	794.270	.595

The results in Table 5 indicate that there are no statistically significant differences ( $\alpha=0.05$ ) in the level of students' responses to the extent to which they have acquired a culture of entrepreneurship and innovation according to gender. Based on the level of significance reaching 0.102, which is greater than the significance level (0.05), we accepted the zero hypothesis that there are no differences. In addition, the results indicate that there are statistically significant differences ( $\alpha=0.05$ ) in the level of students' responses to innovation and creativity in entrepreneurship according to gender.

Based on the level of significance reaching 0.002, which is less than the significance level (0.05), we, therefore, reject the null hypothesis that there are no statistically significant differences and accept the alternative hypothesis that there are statistically significant differences. Also, there were no statistically significant differences ( $\alpha=0.05$ ) in the level of students' responses to the extent of the scientific and practical methods applied in the implementation of Pioneering Projects according to gender variable. Based on the level of significance reaching 0.577, which is greater than the significance level (0.05), we, therefore, accept the zero hypothesis that there are no statistical differences.

**Fifth:** Are there statistically significant differences ( $\alpha=0.05$ ) between student's responses in the course of entrepreneurship and innovation, and their impact on the creation and dissemination of culture and concepts of entrepreneurship and creativity due to the level of study.

To determine this, One Way ANOVA analysis has been applied. Therefore, the result of the analysis of variance is shown in Table 6 below.

**Table 6.** One-way ANOVA of the differences between the level of responses of students who studied entrepreneurship and innovation according to the level of study

ANOVA		Sum of Squares	df	Mean Square	F	Sig.
Extent to which the culture of entrepreneurship and innovation are acquired.	Between Groups	.720	2	.360	1.096	.334
	Within Groups	412.028	1255	.328		
	Total	412.748	1257			
Determine the extent of creativity and innovation in entrepreneurship.	Between Groups	2.382	2	1.191	3.754	.024
	Within Groups	398.179	1255	.317		
	Total	400.561	1257			
Extent of the scientific and practical methods applied in the implementation of Pioneering Projects.	Between Groups	.290	2	.145	.339	.712
	Within Groups	535.834	1255	.427		
	Total	536.123	1257			

The results in Table 6 indicate that there are no statistically significant differences ( $\alpha=0.05$ ) in the level of students' responses to the extent to which they have acquired a culture of entrepreneurship and innovation according to the level of study. Based on the calculated F value reaching 1.096 and the level of significance (0.334), which is greater than the significance level (0.05), there were no statistically significant differences at the level ( $\alpha=0.05$ ) of students' responses to the extent of the scientific and practical methods applied in the implementation of Pioneering Projects according to the level of study. Based on the calculated F value reaching 0.33 and the level of significance (0.71), which is greater than the significance level

(0.05), there are statistically significant differences ( $\alpha=0.05$ ) in the level of students' responses to innovation and creativity in entrepreneurship according to the level of study. Based on the calculated F value reaching 3.75 and the level of significance (0.02), which is less than the significance level (0.05), there are statistically significant differences ( $\alpha=0.05$ ) in the level of students' responses to innovation and creativity in entrepreneurship according to the level of study. In order to know the differences, the Scheffe-test was applied to post comparisons. Table 7 below shows that.

**Table 7.** Scheffe-test of differences on the extent of creativity and innovation in entrepreneurship based on the level of study

<b>Multiple Comparisons</b>									
<b>Dependent Variable: Determine the extent of creativity and innovation in the entrepreneurship.</b>									
<b>Scheffe</b>									
<b>(I)</b>	<b>lev-</b>	<b>(J)</b>	<b>lev-</b>	<b>Mean</b>	<b>Dif-</b>	<b>Std.</b>	<b>Sig.</b>	<b>95% Confidence Interval</b>	
<b>el.edu</b>	<b>el.edu</b>	<b>el.edu</b>	<b>J)</b>	<b>ference</b>	<b>(I-</b>	<b>Error</b>		<b>Lower</b>	<b>Upper</b>
				<b>J)</b>				<b>Bound</b>	<b>Bound</b>
First Year		Second Year		.08839*		.03487	.041	.0029	.1738
		Other		.09038		.04618	.148	-.0228-	.2035
Second Year		First Year		-.08839*		.03487	.041	-.1738-	-.0029-
		Other		.00199		.04557	.999	-.1097-	.1137
Other		First Year		-.09038-		.04618	.148	-.2035-	.0228
		Second Year		-.00199-		.04557	.999	-.1137-	.1097

\*. The mean difference is significant at the 0.05 level.

It should be noted that from Table 7 above, the difference was in favor of first-year students when compared with students in the second year. Hence, the differences were statistically significant.

## **Findings and Conclusion**

The findings of the study revealed, in general, the importance of specialized courses in entrepreneurship and innovation. This is attributed to the key role it plays in creating and developing a culture of entrepreneurship and creativity, and to instill entrepreneurship and innovation in students who are in the first year of university most especially. The study also revealed that there is a high degree to which student entrepreneurship have imbibed the culture of innovation and entrepreneurship, also found is a high degree of creativity in the student entrepreneurship. The study further revealed that there is the adoption of scientific and practical methods in the implementation of Pioneering Projects among the students for the course. Therefore, this and other findings would help students to acquire a culture of entrepreneurship and creativity. The conclusion emanating from the study is that this would help them develop special goals in becoming entrepreneurs and innovators in their different fields of study. These results are consistent with many articles (Zidan, 2003; Mubarak, 2005; Fawaz, 2008; Ramadan, 2012; Hattawi, 2014; Rashid & Al Arabi, 2016; Doğan, 2016) that emphasized on the importance of teaching entrepreneurship and innovation to become a community culture. The study also corroborates with the findings of Salamzadeh, Farjadian, Amirabadi, & Modarresi, (2014) that noted that some attributes such as pragmatism, visionary, open-mindedness, risk-taking, etc are very significant to the development of student entrepreneurship.

## **Recommendations**

Based on the results obtained, the study recommends mainstreaming the Jordan University of Science and Technology's experience in teaching and spreading the culture of entrepreneurship and innovation to all other universities in Jordan and the Arab world. Also, the study recommended that more research in this regard using other topics and variables should be conducted.

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