

## **The Role of Community Colleges in Developing Creativity and Innovation Skills of Vocational Students**

### **( The University College of Applied Science as a Case Study)**

*Asmaa Abusamra \**

#### **ABSTRACT**

This study aims to identify the role of community colleges in developing innovation and creativity skills among the students who are enrolled in its vocational programs from their point of view according to the study variables of gender, age and province in the second semester of the academic year 2018/2019. Furthermore, it sheds lights upon the efforts paid by community colleges in order to develop the skills of innovation and creativity in their various vocational programs. In order to achieve the study purposes, the quantitative method is used and a questionnaire as a study tool has been developed, distributed among the study sample and analysed by (SPSS). The results indicate that the arithmetic average of all the questionnaire's items reaches (3.98) and thus the relative weight is (79.65). This means that there is a great deal of agreement on the questionnaire in general. The study also showed that there are no statistically significant differences between the averages of the study sample responses in all areas of the questionnaire for the role of the University College of Applied Sciences in developing innovation and creativity skills for vocational students according to their views, which are attributed to the variables of the study with the exception of age and province. The study recommends the need to provide a range of physical and moral facilities in the vocational institution's environment, which support the enhancement of the creativity and innovation growth of technical and academic staff, vocational curriculum and the management practices and policies.

**Keywords:** Innovation; creativity; community colleges; vocational education; curriculum; management; policies.

#### **Introduction**

Creativity and innovation are two important issues in the field of education. Creative and talented people have become major concern in the lives of nations. All countries are seeking for new methods for detecting creative minds and obtaining methods for caring and encouraging them nationally and globally. The ultimate goal of education in our time is to develop creative and innovative thinking in all forms. Therefore, the role of the educational institutions is to develop innovative individuals who are able to solve problems creatively, and have the ability to think about various innovative alternatives to the new situations.

In the same regard, vocational education is receiving great attention and care because of its importance in providing unique human resources, especially in preparing young people who are theoretically and practically qualified to contribute to the development of their societies by employing these human forces in various development plans to improve industry. Therefore, vocational education is an indivisible from the educational system.

Vocational education in its broad form is the type of education that makes an individual more capable of working in a group of professions than others. This is different from the general form of education, which is equally important, even though individuals are not prepared to be qualified to do vocational work (Al Khatib, 1995) cited in (Abusamra, 2018). The development of creative thinking among individuals in general and students of vocational education in particular has become a priority that educational institutions must pursue through their intended and unintended

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activities and programs. AlZubai & Janabi (2003) indicate that vocational education is the kind of formal education that includes educational preparation and imparting skills and professional vocational knowledge carried out by regular educational institutions at the secondary level for the purpose of preparing skillful workers in various industrial, agricultural, medical, administrative and commercial fields. For Tanggaard (2017), vocational education and training aims to prepare people for employment in crafts and industry. Therefore, in this field, there is an ever-growing requirement for creativity and innovation.

By reviewing literature regarding innovation and creativity in education, the current study finds that most of these studies dealt with this concept in the context of school or higher education in general, however, few studies dealt with this in the context of vocational education especially in community colleges. The study highlighted the concept of innovation and creativity in these studies to formulate the theoretical framework and to conceptualise the main dimensions in this study.

In terms of defining both creativity and innovation, since they are not synonyms in terms of educational implementation, creativity can be defined as the capability or the act of conceiving something original or unusual. Innovation on the other hand, is the implementation of something new. Invention is the creation of something that has never been made before and is recognised as the product of some unique insight according to this study. In the context of education, creativity and innovation can take different forms and concepts. Treffinger et al. (2012) state that we must all be able to think creatively, manage change, and solve complex, open-ended problems. Their study clarifies that:

Education today is different in its structure and practice than it was in any previous generation, not just because of the impact of technology and the Internet, but also because, across the lifespan, every person studies, works, and plays in a global community that was previously unknown to most generations. Although organisations worldwide recognise that their success both now and, in the future, depends on a workforce capable of effective thinking, problem solving, and innovation, educational practice still lags behind our knowledge in these areas.

Ferrari et al. (2009) illustrates that creativity and innovation are broad, complex and multi-faceted concepts that can be applied to several fields. Their multi-disciplinary study accounts for a variety of approaches and conceptualisations. In highlighting this in the context of teachers-student relationship, (Beghetto, 2007) points out that teachers might ask students to use their creativity in the design of a project, or might refer to 'a student's response as creative, without explaining what they mean'. Kerr and Lloyd (2008) indicate that artful learning opportunities enhance capacity for awareness of creativity in one's self and in others, leading, through a transformative process, to enhanced leaders and managers. Their study concludes that arts-based management education can enhance creative capacity and develop managers and leaders for the twenty-first century business environment. Plucker (2016) also refers to creativity and innovation as key of twenty-first century skills for career and life success. His study argues that recent research provides evidence that the jobs of the future will increasingly require the ability to bring creative solutions to complex problems. And creativity is often the 'spice of life', that little extra something that makes the mundane into the interesting, making our routines into fresh new approaches to our daily lives.

Meanwhile, Craft (2003) argues that as far as education is concerned, this growth in emphasis and value placed on encouraging creativity can be seen as being in stark contrast with the government policy prevalent from the late 1980s onward. Craft (2003) states that one of the supporting topics and avocations for this reviving of enthusiasm for cultivating innovativeness is that the individual and aggregate strengthening which is encouraged by the improvement of imaginative ability supposedly is something worth being thankful for at the social and monetary level specifically. Baruah and Paulus (2018) examine creativity with a special focus on collaborative creativity and its application in the context of education. Their study discusses the theoretical basis for 'collaborative creativity', different techniques for generating ideas in groups, the process of selecting the best ideas, and the role of culture and diversity in collaborative creativity.

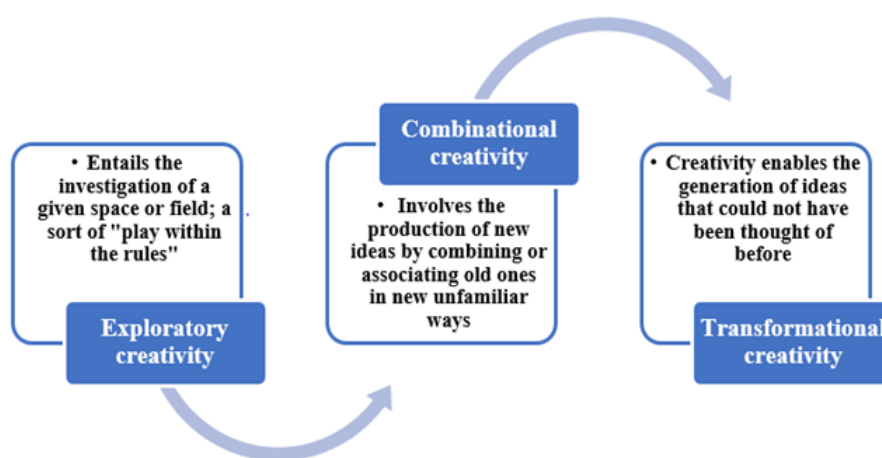
Runco (1999) argues that teachers, parents, children and other educational actors hold 'a tacit knowledge' about creativity manifested in opinions and expectations, which are in sharp contrast with what the research is showing and which can have detrimental effects on any attempts to foster creativity in schools. This tacit and shared knowledge

builds up a series of ‘implicit theories’, which account for how ordinary people think about creativity. These theories differ from the ones held and scientifically tested by researchers, which Runco calls "explicit theories". Figure (1) shows a series of ‘implicit theories’, as Sharp (2004) states regarding creativity. The model presented in Figure (1) is an elaboration of other studies (Sharp, 2004; Beghetto, 2007; Runco, 1999) which the current study cited from Ferrari et al. (2009).



**Figure 1. Implicit versus explicit theories of creativity (Ferrari et al., 2009)**

Boden (2001) in Figure (2) distinguishes three types of creativity, each of them is involving different kinds of knowledge acquisition.



**Figure 2. Types of creativity (Boden, 2001)**

A longing for genuine advancement, innovativeness, experimentation, and different open doors in training can't be acknowledged until the state enables common society to thrive and abstains from politicizing question. The need of the change of training to meet the apparent needs of the twenty-first century represents another and significant obstacle to be survived (Tan and Gopinathan, 2000). In another context, Watson (2018) examines implementing creativity and innovation in a non-elective First Year Experience (FYE) course in a college of technology. The study shows how the (FYE) course serves as an appropriate paradigm to address these desired outcomes in an effort to adequately prepare college graduates for the twenty-first century workforce.

There is an abundance of literature highlighting the need to focus on enhancing students' creativity in higher education. However, Egan et al. (2017) argue that, currently, there is a gap in awareness of evidence-based initiatives

being employed in institutions to address this need. The discussion on the best way to best portray innovativeness has not yet arrive at agreement in this way, their investigation present a convention for another audit that distinguishes the qualities of the systems just as the instruments being utilized by teachers to officially build up understudies' inventiveness in higher education. It likewise gives knowledge into how these teachers are defining creativity. For Zhibin & Weiping (2017), modern development of vocational education requires the joint participation of multiple departments and entities, and industry-education cooperation is a basic requirement. Against the backdrop of the third industrial revolution, cultivating skilled, innovative graduates and transforming the model of industrial technical innovation requires building a new, coordinated collaboration between higher vocational education and industrial development. From an open science perspective, collaboration between higher vocational education and industrial development takes place based on the basic inherent logic of entities' heterogeneous innovative capabilities. Based on theoretical research and case studies, the collaboration between higher vocational education and industrial development must focus on establishing common visions for diverse industrial and educational entities, common interest foundations for school-enterprise microentities, and order parameters of collaborative frameworks and on establishing a long-lasting process for coordinating diverse school-enterprise entities, value integration, interest integration, resource integration, and collaborative implementation Zhibin & Weiping (2017).

Peng et al. (2017) illustrate that excellent vocational education teachers training project is a key measure for solving the conflict of the demand for excellent and new teachers of modern vocational education and teacher training lagging behind. As the national key construction base for training vocational education teachers, Jilin Teachers' Institute of Engineering and Technology has built the talent training model for excellent vocational education teachers in the aspects of talent training model, training standard and requirement as well as curriculum structure system design which provides valuable reference for related training of excellent vocational education teachers. Liao & Chew (2018) explain that in the case of English education in higher vocational colleges, collaborative innovation is the trend of development. The students who are trained by traditional higher vocational English teaching have been unable to meet the needs of the employers in today's society. Therefore, it is necessary to promote the system construction of the conception "Cultural education, Compound education and Cooperative education" through collaborative innovation. We should strengthen the professional ability of higher vocational students, career change ability, social adaptability and entrepreneurial innovation ability, and develop a group of high-level application talents with professional technical ability

According to Nie (2019), under the innovation-driven development strategy, it is inevitable to reconstruct the curriculum system of higher vocational credit system because of the diversified demands of enterprise employment, the internal development demands of higher vocational colleges and the personalized growth demands of students. Based on improving quality, knowledge and potential as a logical starting point, and general platform, professional shunt and multipath training as the critical path, we deeply analyze the breakthrough point, means, support and implementation of the research path. In this way, we promote curriculum structure optimization and innovation of credit system constantly, and improve credit system teaching management and teaching running mechanism.

Panina et al. (2019) in their study tried to develop a practical system to interconnect the innovation potential of the VET institution and to develop the preparation of graduates for professional practice in accordance with the external conditions of the regional system of vocational education. The study confirmed the reasonableness of including the key component "qualified specialist" in the system "economy - labor market - vocational education", which guarantees a continuous and interconnected renewal of resources at each level of systemic activities. The document provides the basis for the methodology for the integrating organization of the learning process, which allows recording, diagnosing and evaluating the educational, professional and personal development of students as future specialists.

The report delivered at the Nineteenth CPC National Congress proposed to improve the system of vocational education and training, and to promote integration between industry and education and cooperation between enterprises and colleges, which inspires and broadens the thoughts and paths of constructing higher vocational colleges. According to Feng & Hao (2019), Great efforts should be made to perfect the vocational education and training system, which will

certainly effectively drive and promote the reform and innovation in the construction and development of vocational colleges. It was analyzed by concluding the development direction of vocational education in China and counting a great deal of data. It was researched that the thoughts and paths are powerful for the vocational college construction. It was proposed that the reform and innovation measures are effective for the construction.

Tanggaard (2017) argues that both service-oriented and productive industries need employees who are capable of recognising new opportunities and inventing new products and undertakings. Moreover, the rapid rise of technology in the global economy has highlighted the need for our human capacity to adapt to these technological changes and continue creating and developing. Tarman (2016) also states that we are living in a world that is changing rapidly and becoming more globalized. Especially the changes in the areas of science, technology and economy are becoming effective in the areas like education and health that are closely related to human life. These changes create new opportunities while opening new challenging areas. In order for countries to compete with each other, they need to be creative in all areas and they also need to be reformist to cope with domestic, national and global problem. Tierney and Lanford (2016) discuss the concepts of sustainable and disruptive innovation by demonstrating how change and innovation has been a consistent fixture of higher education since its inception. The study considers three dimensions of innovation, diversity, intrinsic motivation, and autonomy, that positively impact the ability of individuals working within higher education to be innovative. The study also addresses three additional concepts, time, efficiency, and trust, that are important for a thorough consideration of innovation within an institutional setting. In their study, Zacher and Johnson (2015) showed that students' perceptions of professors' transformational leadership positively predicted professors' ratings of their students' creativity above and beyond students' perceptions of professors' passive-avoidant and transactional leadership. In spite of expectations, understudies' impression of educators' latent avoidant and value-based administration did not essentially anticipate teachers' appraisals of understudies' creativity.

In Palestine, there is a need for creative and innovative educational system and more creative administrative polices and creative academic staff as well as creative curriculum that will assure the preconditions for innovation and creativity at all levels of the system, including vocational education. Vocational education and training are concerned with the acquisition of knowledge and skills for the world of work. In addition to the knowledge and skills needed in the occupation, today's students need to acquire twenty-first century skills that can be used to help them succeed and compete in their chosen careers.

Vocational education is somehow connected to the bath which the students may choose before finishing their schooling since it is provided in the last two years of secondary schools under the supervision of the Palestinian Ministry of Education and Higher Education (MoEHE). However, community colleges, in this regard, also provide vocational programs that support these students after finishing their school years. These community colleges are under supervision of the Palestinian Ministry Higher Education (MoHE) whether they are private or public institutions. This opens a wide discussion regarding the role of higher education, nationally and internationally, in supporting and encouraging vocational education. Okoye et al. (2015) reported that one of the factors that plague higher education system in Nigeria is lack of intrigue to discover an innovative effort that should bear on research and development, thus the backwardness of Nigeria among the comity of highly developed nations globally. The study considered the need for creative empowerment through vocational education and training and entrepreneurship education for creativity and innovation; with emphasis on indicator factors to global economy. The study concludes that to join in the bandwagon of improved economy, stakeholders in Nigerian education must not neglect vocational education and training education. Stewart (2015) clarified that many countries have focused on expanding higher education to increasing segments of the age cohort while vocational education and training, often associated with an older industrial era, has been relatively neglected. However, slow economic growth, high unemployment, including among college graduates, and rising inequality made developing a modern vocational education and training system as a vehicle for meaningful career preparation for a more demanding labor market as an issue of increasing urgency around the globe. Krayukhina et al. (2016) develop a conceptual structural model of professionally-oriented learning and creative activity of the

vocational pedagogical university students. Their study presents a structural model of learning and creative activity of vocational pedagogical university students. It also justifies the necessity to single out in the structure of the students' learning and creative activity in three interconnected components (creative, professional-pedagogical and personal-pedagogical). Furthermore, it proves the productivity of activating the learning and creative activity of the vocational pedagogical university students by organizing it as quasi-professional process of searching and solving professional tasks which are subjectively and objectively new, on the basis of using synectics including association methods of activating creative thinking integrated into the its structure.

Tanggaard (2017) poses the question: what conception of the phenomenon of creativity is best suited to the field of vocational education? Tanggaard's concern is that an understanding of creativity should be developed with vocational education and training in mind. It is not enough to import models from other areas, where the distinction between ideas and production or creativity and execution is often relatively hazy and therefore not well suited for vocational education and training comprising production, handcraft and industry. Reeve (2016) [24] argues that those involved in technical and vocational education and training must properly prepare their students to live and work in the twenty-first century. This includes providing students with a solid knowledge and skills in the discipline being studied and developing instruction based on contemporary educational thinking and practices. It also means providing them with important skills needed in twenty-first Century. Reeve (2016) reviewed the following "key" twenty-first century skills: 'Science, Technology, Engineering, Mathematics (STEM); Problem-Solving; and the Four 4Cs which are 'Critical Thinking, Communication, Collaboration, & Creativity'.

Realizing the importance of vocational education, the University College of Applied Sciences (UCAS), which provides different diploma and bachelor educational programs, has created a chance for vocational student to join its campuses. With its humble start, the University College of Applied Sciences (UCAS) witnessed the increasing numbers of the enrolled students in its various vocational programs starting from two accredited programs to reach more than 30 accredited programs in 2017/2018. It was clear that the realisation of the integral role of vocational education in the Palestinian society in Gaza Strip encouraged (UCAS) to take the lead to support its students and raise the awareness of the Palestinian society to sustain their sons and daughters' choice of enrolling in such education and joining its vocational programs. Furthermore, (UCAS) has established a strong basis for its vocational department with a highly accommodated building with different modern labs and workshops. UCAS management and new policies enhanced the vocational education with qualified technicians and academic lecturers. UCAS also created a system of providing special curriculum that focuses upon implementing entrepreneurship and that supports learning and motivates students' creativity and innovation. Therefore, the current study tests this role in accordance to vocational education students' point of view since they are the main target in the educational process and their benefit is the main concern. The study measures the extent of this role through three dimensions of the management and administrative policies, vocational technical instructors as well as the provided curriculum. Detecting this role will enhance the efforts paid by the university and its management to maintain creativity and innovation and it will help in suggesting outstanding recommendations for other universities and community colleges that support vocational education in Gaza Strip in Palestine.

The current study builds its methodology and concepts upon the theoretical frame of the previous studies. This study measures the role of supporting the fields of innovation and creativity among vocational students in UCAS in terms of three dimensions depending on the previous studies and literature as follows:

1. The first dimension is the role of administration and management policy since it was highlighted in some studies such as (Zacher and Johnson, 2015; Kerr and Lloyd, 2008).
2. The second dimension is the role of technical and academic staff working in the vocational programs and it was also highlighted by some other studies such as (Beghetto, 2007).
3. The third dimension is regarding the curriculum implanted in teaching vocational students and it was presented in some studies such as (Kerr and Lloyd, 2008; Runco, 1999; Watson, 2018).

### **Problem statement**

Evaluating the role which is offered by the community colleges in improving and developing creativity and innovations skills for their vocational students is a needed issue. This role should be measured according to their students' opinions of the services presented to them through the institutions management and policies, instructors as well as the taught curriculum. During the past ten years in Gaza Strip, the number of unemployment graduates increased and vocational education became the solutions of thousands of these students seeking for creating their job career. It also became the parents' choice for their sons and daughters to ensure their future working life security. Therefore, lots of higher education institutions such as community colleges and university colleges fall in a continuous competition to attract more and more students to enroll in their vocational departments. The creativity and innovation skills of vocational students is a questionable issue since there is a need for distinctive administrative policies and teaching techniques as well as different and unique curriculum. The University College of Applied Sciences UCAS is chosen in this study since it has a variety of 30 majors and more than 400 male and female students.

The current study aims to identify the role of the University College of Applied Sciences (UCAS) in developing the skills of innovation and creativity among students of vocational education according to the variables of study gender, age and province. It also aims to recognise the efforts that (UCAS) adopts to develop the skills of innovation and creativity in its taught vocational programs. The study can be useful for academic teachers within the vocational and pedagogical education system, as well as for professionals who aspire to develop creative abilities of their students based on creativity methods. The importance of this study stems from the importance of the subject that it presents since most of the previous studies address creativity and innovation in the context of schools or higher education universities neglecting vocational education and neglecting the role of community colleges. This study may be used by the Palestinian Ministry of Education and Higher Education (MoEHE) to develop future strategic plans for vocational education to support efficient and market-oriented vocational education system. In addition, detecting this role will enhance the efforts paid by the community colleges and their administration to maintain creativity and innovation and it will help in suggesting outstanding recommendations for other universities and colleges that support vocational education in Gaza Strip. Furthermore, it proposes recommendations to achieve the required creativity and innovation in vocational education in Palestine, which reflect its importance in enhancing the national economy and solving the problems of unemployment. Creativity and innovation skills have become an urgent need, especially in the societies that have adopted them in all their activities, therefore, it has been necessary to shed some light upon what educational institutions can do and offer in order to achieve and implement them through their practices and administrative policies and also to address obstacles they may encounter in order to reduce them as much as possible. Therefore, the main question of the study is: What is the role of the University College of Applied Sciences (UCAS) in developing the skills of innovation and creativity among the students of vocational education according to the variables of the study gender, age and province.

### **Method**

The study population consists of all students of vocational education at the University College of Applied Sciences (UCAS) in the second semester of the academic year 2018/2019 according to admission and registration records for the students who are enrolled in the vocational education system ( $N=455$ ). The comprehensive quantitative method was used and a questionnaire was distributed to all members of the study population comprehensively. 365 questionnaires were retrieved yielding a percentage of (80.2%), therefore, the final sample of the study reached ( $n=365$ ). The distribution of study sample members according to personal data in the questionnaire is shown in table (1).

**Table 1. Distribution of sample according to personal data (N = 365)**

Personal Information	Categories	Number	Percentage
Gender	Male	267	73.2
	Female	98	28.8
Vocational programs	TV presentation	10	2.7
	Refrigeration and air conditioning	47	12.9
	Cosmetology	19	5.2
	Electrical wiring	52	14.2
	Sewing and embroidery	15	4.1
	Television photography and editing	28	7.7
	Computer networking and technical support	35	9.6
	Executive secretarial and office management	72	19.7
	Maintenance of electrical appliances	23	6.3
	Maintenance of smart phones	24	6.6
	Aluminum technician	13	3.6
	Solare energy systems technician	14	3.8
	Diesel engine technician	17	2.7
Age	Less than 18 years old	231	63.3
	18 years and more	134	36.7
Province	South of Gaza	25	6.8
	Gaza city	260	71.2
	North of Gaza	80	21.9

### Data Analysis

The study developed a questionnaire based on the theoretical literature and previous studies. The questionnaire consisted of (30) items divided into three main dimensions: 'Management and administrative policy, technical and academic staff and the implemented curriculum to identify the role of University College of Applied Sciences (UCAS) in developing vocational students' innovation and creativity skills as a case study. All dimensions employed a 5-point response format (strongly disagree, not sure, agree, and strongly agree). The questionnaire was presented in its preliminary form to a group of arbitrators and scientist consisting of (15) arbitrators of specialists in the field of education and statistics. The opinions of the arbitrators have taken in consideration to modify the questionnaire in its final form. To verify the structural validity, correlation coefficients were computed between the score of each field of the questionnaire and the total score of the questionnaire as in Table (2).

**Table 2. The correlation coefficients**

Dimensions	Correlation coefficient	Probability value
Management and admiration policy	.455	<0.001
Technician and academic staff	.821	<0.001
Curriculum	.592	<0.001

Table (2) shows that all the correlation coefficients in all fields of the questionnaire are statistically significant at the level of significance considering ( $p \leq 0.01$ ); Thus, all the fields of the questionnaire are considered to be validated for the measurement. The reliability and stability of questionnaire was verified in two ways: First: Cronbach's Alpha method was used to measure the stability of the questionnaire. The results shown in Table (3) show that the value of Cronbach's Alpha coefficient is high, as it reached (0.813) for all the items of the questionnaire, which means that the



coefficient stability of the questionnaire is high.

**Table 3. Cronbach's Alpha coefficient**

Dimensions	Questionnaire items	Cronbach's Alpha
Management and admiration policy	10	0.690
Technician and academic staff	10	0.763
Curriculum	10	0.791
All	30	0.813

Second: The correlation coefficients were divided into two parts. The correlation coefficient between odd questions' scores and dual questions' scores was calculated. The coefficient of (Spearman Brown) equation was then corrected and the results shown in Table (4) were obtained. The results show that the adjusted correlation coefficient (Spearman Brown) is statistically significant. Thus, the reliability of the study was verified, which makes the study fully confident in the validity of the questionnaire and its validity to analyse the results and to test the hypotheses of the study.

**Table 4. Modified correlation coefficient (Spearman Brown)**

Dimensions	Correlation coefficient	Modified Correlation coefficient
Management and admiration policy	0.482	0.651
Technician and academic staff	0.685	0.813
Curriculum	0.722	0.838
All	0.730	0.844

The current study aims at identifying the role of the University College of Applied Sciences (UCAS) in developing innovation and creativity skills among vocational students according to their point of view which is attributed to the study variables of gender, age and province. Therefore, the main question of the study is:

1. What is the role of the University College of Applied Sciences (UCAS) in developing innovation and creativity skills among vocational students? The other sub-questions which stem from the main question of the study will be stated as follows:

2. Are there statistically significant differences at the level of significance considering ( $p \leq 0.05$ ) to the role of the University College of Applied Sciences (UCAS) in developing innovation and creativity skills among vocational students in accordance to their point of view which is attributed to the study variable of gender (male, female)?

3. Are there statistically significant differences at the level of significance considering ( $p \leq 0.05$ ) to the role of the University College of Applied Sciences (UCAS) in developing innovation and creativity skills among vocational students in accordance to their point of view which is attributed to the study variable of age (less than 18 years old, 18 years old and more)?

4. Are there statistically significant differences at the level of significance considering ( $p \leq 0.05$ ) to the role of the University College of Applied Sciences (UCAS) in developing innovation and creativity skills among vocational students in accordance to their point of view which is attributed to the study variables of province (North Gaza, Gaza city, South Gaza)?

The formulated hypotheses of the study are then stated as follows:

**H<sub>01</sub>:** There are no statistically significant differences between the averages of the estimates of respondents in all the fields of questionnaire at the level of significance considering ( $p \leq 0.05$ ) for the role of the University College of Applied Sciences (UCAS) in developing innovation and creativity skills among vocational students in accordance to their point of view which is attributed to the variable of gender (male, female).

**H<sub>02</sub>:** There are no statistically significant differences between the averages of the estimates of the respondents in all fields of questionnaire at the level of significance considering ( $p \leq 0.05$ ) for the role of the University College of

Applied Sciences (UCAS) in developing innovation and creativity skills among vocational students in accordance to their point of view which is attributed to the variable of age (less than 18 years old, 18 years old and more).

**H<sub>03</sub>:** There are no statistically significant differences between the average of the estimates of the respondents in all fields of questionnaire at the level of significance considering ( $p \leq 0.05$ ) for the role of the University College of Applied Sciences (UCAS) in developing innovation and creativity skills among vocational students in accordance to their point of view which is attributed to the variable of province (North Gaza, Gaza city, South Gaza).

### Results and discussion

The current study has four main questions. The study tested these questions as follows:

1. What is the role of University College of Applied Sciences (UCAS) in developing innovation and creativity skills among its vocational students? To answer this question, the mean, standard deviation, relative weight, and order were used.

**Table 5. The arithmetical, relative and order average for each area of the questionnaire**

Dimensions	Mean	Relative weight	T-test	Order
Management and admiration policy	3.97	0.34	79.36	2
Technician and academic staff	4.11	0.37	82.12	1
Curriculum	3.87	0.35	77.47	3
All	3.98	0.35	79.65	

It is also clear from Table (5) that the arithmetic average of all the questionnaire items reaches (3.98) and thus the relative weight is (79.65). This means that there is a great deal of agreement on the items of the questionnaire in general. Table (5) shows that the first field, 'Technician and academic staff' has ranked as the first, with a relative weight of (82.12), which means that there is a high degree of approval of this field in general. The study attributed this to the vital role of vocational teachers and instructors in the success of the process of implementing and integrating innovation and creativity in vocational education among their students. This can highly be achieved if these teachers received sufficient and qualified training in different vocational aspects. Furthermore, supporting vocational institutions with qualified teachers and specialists in various professional aspects will lead to the success of orienting innovation and creativity in vocational education in the educational institutions in Gaza Strip.

The second field 'Management and admiration policy' has ranked as the second, with a relative weight of (79.36), which means that there is a high degree of agreement on this field in general. This indicates the importance of the management role inside the University College of Applied Sciences (UCAS) in sustaining the basis of innovation and creativity for its students. This role is highly anticipated not only by its students, but also by its teachers and outstanding related community. The role of the management is anticipated by the regulations, policies and facilities offered by (UCAS) to enable its students to think out of the box and integrate new technology through their study.

The third field "curriculum" was ranked as the third with a relative weight of (77.47). This means that there is a high level of agreement on this field. The study attributed this to the fundamental aspect related to the curriculum which is the basis of vocational education process and the main influence that shapes creativity and innovation. The management of the vocational education at (UCAS) has paid efforts in evaluating the curriculum annually and performed strategic plans to integrate entrepreneurship and smart technology implementation through curriculum. This is considered a motive for encouraging creativity and innovation for students. In addition, those curricula, according to the nature of vocational education, do not focus on homework or reports or regular assignments; in contrary, they focus on applying productive and new projects. The positive approval of the target population in this study is consistent with the study results of (Runco, 1999).

The study tested the other hypotheses as follows:

The first hypothesis: There are no statistically significant differences between the averages of the estimates of

respondents in all the fields of questionnaire at the level of significance considering ( $p \leq 0.05$ ) to the role of the University College of Applied Sciences (UCAS) in developing innovation and creativity skills among vocational students in accordance to their point of view which is attributed to the variable of gender (male, female). To test this hypothesis, T-test for two independent samples was used.

**Table 6. Results of T-test for two independent samples – gender**

Dimensions	Gender	Number	Average Mean	Standard Deviation (SD)	"T" Value	Level of significance (P)
Management and admiration policy	Male	267	3.97	0.33	0.237	0.812
	Female	98	3.96	0.36		
Technician and academic staff	Male	267	4.10	0.37	-0.700	0.484
	Female	98	4.13	0.37		
Curriculum	Male	267	3.88	0.37	0.975	0.330
	Female	98	3.84	0.30		
Total	Male	267	3.98	0.22	0.251	0.802

The results shown in Table (6) indicate that the probability corresponding to T-test for two independent samples is greater than the level of significance ( $p \leq 0.05$ ) for all fields. Thus, it can be concluded that there are no statistically significant differences between the averages of the estimates of the respondents in all fields of questionnaire at the level of significance considering ( $p \leq 0.05$ ) for the role of the University College of Applied Sciences (UCAS) in developing innovation and creativity skills among vocational students in accordance to their point of view which is attributed to the variable of gender (male, female). The study attributed this to the realisation of both gender to the role of supporting creativity and innovation which is paid by (UCAS) for its students without any distinction. The university during years has made a tremendous leap in the accommodation a vocational campus supported with workshops that facilitate learning for both genders such as solar system workshops and car maintenance workshops for male and stimulating hairdresser salons and sewing and embroidery workshops for females.

The second hypothesis: there are no statistically significant differences between the averages of the estimates of the respondents in all fields of questionnaire at the level of significance considering ( $p \leq 0.05$ ) to the role of the University College of Applied Sciences (UCAS) in developing innovation and creativity skills for vocational students in accordance to their point of view which is attributed to the variable of age (less than 18 years, 18 years and more). To test this hypothesis, T-test for two independent samples was used.

The results shown in table (7) show that the probability value corresponding to T-test for two independent samples is greater than the level of significance considering ( $p \leq 0.05$ ) in the fields of 'management and admiration policy and technician and academic staff'. This indicates that there are no statistically significant differences between the averages of the estimates of the respondents in these two dimensions of questionnaire at the level of significance considering ( $p \leq 0.05$ ) for the role of the University College of Applied Sciences (UCAS) in developing innovation and creativity skills among vocational students in accordance to their point of view which is attributed to the variable of age. However, table (7) also shows that the probability value corresponding to the T-test for two independent samples is less than the level of significance considering ( $p \leq 0.05$ ) for the vocational education in curriculum field, and thus it can be concluded that there are statistically significant differences between the average estimates of the study sample in the favor of those under the age of 18 years. The study attributed this for the reason that most of the new enrolled students whether male or female are of those who are under the age of 18 years old. Some of those students, were less fortunate in passing high school secondary certificate national exam because of the rigidity of school curriculum which focuses on theatrical parts rather than practical issues. Therefore, the study argues that these

students face this gap that shifts between understanding the curriculum and know how to implement and use it. This concern regarding curriculum needs more effort from the university administration to fill this gap. As a result, these students after joining vocational programs realise the difference in the curriculum presented to them during their study in the vocational programs at (UCAS), which focuses mainly upon the implantation of projects and practical tasks that makes the learning more enjoyable and interesting for learning and stimulates creativity and innovation.

**Table 7. T-test results for two independent samples – age**

Dimensions	Age	Number	Average Mean	Standard Deviation (SD)	"T" Value	Level of significance (P)
Management and admiration policy	Less than 18 years old	231	3.94	0.33	-1.810	0.071
	18 years old	134	4.01	0.36		
	and more					
Technician and academic staff	Less than 18 years old	231	4.09	0.37	-1.432	0.153
	18 years old	134	4.14	0.37		
	and more					
Curriculum	Less than 18 years old	231	3.90	0.35	2.119	0.035
	18 years old	134	3.82	0.36		
	and more					
All	Less than 18 years old	231	3.98	0.22	-0.606	0.545

The third hypothesis: there are no statistically significant differences between the averages of the estimates of the respondents in all fields of questionnaire at the level of significance considering ( $p \leq 0.05$ ) for the role of the University College of Applied Sciences (UCAS) in developing innovation and creativity skills among vocational students in accordance to their point of view which is attributed to the variable of province. To test this hypothesis, one-way ANOVA was used.

**Table 8. Results of the "one-way ANOVA" test – the province**

Dimensions	Source of variance (SV)	Number	Average Mean	Standard Deviation (SD)	"T" Value	Level of significance (P)
Management and admiration policy	Between	0.329	2	0.165	7.433	*0.001
	Within	3.542	362	0.022		
	Total	3.871	364			
Management and admiration policy	Between	0.705	2	0.352	4.486	*0.013
	Within	12.565	362	0.079		
	Total	13.270	364			
Curriculum	Between	0.881	2	0.441	6.242	*0.002
	Within	11.293	362	0.071		
	Total	12.174	364			
All fields	Between	0.573	2	0.286	8.609	*0.000
	Within	5.324	362	0.033		

Dimensions	Source of variance (SV)	Number	Average Mean	Standard Deviation (SD)	"T" Value	Level of significance (P)
	Total	5.897	364			

The results in (Table 8) show that the probability value is less than the level of significance considering ( $p \leq 0.05$ ) and thus it can be concluded that there are statistically significant differences between the average estimates of the study sample on these dimensions according to the variable of province. Table (9) shows the results of Scheffe test to compare the average estimates of the categories of provinces. The results show that there are statistically significant differences between the average estimates for this variable for those who live in Central of Gaza province. The researcher attributed this to the reason that the majority of the enrolled students in the vocational programs are from Central Gaza province. Furthermore, Central Gaza province is considered the center of the most majority of educational institutions such as universities and community colleges and this highlights many future research questions of the lack of enough educational institutions and vocational education providers, in particular, in the border areas of Gaza Strip.

**Table 9. Scheffe test**

Province	Average	Differences between variables			
South of Gaza	4.15	1			
North of Gaza	4.03	0.121	1		
Central of Gaza	4.22	-0.068	-0.188	1	

### Conclusion

Education is seen as a crucial assist in fostering creative and innovative skills. Creativity and innovation are conceptualised as skills for all. They are abilities that everyone can develop and they can therefore be fostered or, likewise, inhibited. Educational actors have the power to unlock the creative and innovative potentials of the enrolled students. Creativity and innovation have strong links with knowledge and learning. Accordingly, both creativity and innovation should be understood as skills which may be developed through creative administrative and management policies, creative curriculum and innovative teaching. Assessment in vocational institutions' providers also needs to be addressed as current methods that should be taken into account for supporting creativity and innovation for their students. The university management and administrative policies can sustain collaboration and networking services that offer further opportunities to develop creative ideas in cooperation with others who are concerned. Vocational education management should make provision for affordable materials and components. Community colleges' policy should be inline with innovation and creativity mechanisms worldwide. This means supporting the enhancement of staff as well as students in terms of initiation, flexibility and motivation which are main elements of creativity. Educational curriculum should portray creativity for the students in order to develop them professionally and technologically. Both creativity and implementing technology require the re-definition of the role of the teachers as enablers, motivators, mentors and coaches of learning processes that are essentially owned and controlled by the students as learners themselves. Vocational students' final project must be a creative project not a research or abstract assignments which must be strictly monitored by their teachers. Workshop and trainings should be organised for vocational students and their teachers while both should also be sent for trainings internationally to be updated with the new development in their field because of the technological advancement and social changes

### Recommendations

Based upon the previous findings, the current study makes the following recommendations:

1. The need to provide a range of physical and moral facilities in the educational institutions' environment in collaboration with stakeholders and parents, which will help to enhance the creative growth of teachers, curriculum as well as the management policies. These facilities include accommodated laboratories and workshops that create a good environment for vocational students to practice their own skills and good educator to sustain the moral basis for these

skills in their students.

2. The management of community colleges should work continuously to develop and improve structures, systems and working methods to ensure contribution and participation of both lecturers and students, to stimulate creativity, and to encourage practical research, experimentation, creativity and innovation.

3. The need to select educational leaders, in vocational education providers, who believe in the importance of creativity, and who are flexible in thinking and characterised with openness to new experiences, and have the tendency to face risk, through conducting personal interviews and organising planned tests, and set the candidates for administrative work in a pilot year to ensure that they obtain the needed qualifications.

4. The need to provide special raining for the academic staff in the vocational departments to use modern teaching strategies and to implement up to date methodologies that develop innovation and creativity such as: problem solving, brainstorming and surveying.

5. The Palestinian Ministry of Education and Higher Education (MoEHE), the Ministry of Labor (MoL) and the Ministry of Social Affairs (MoSA), in cooperation with other concerned parties, should develop a systematic policy, mechanisms and procedures to encourage students to move towards vocational and technical education.

6. Enhancing the concept of entrepreneurship through vocational teachers' teaching, the management roles and regulations as well as the taught curriculum.

7. The Curricula, in the vocational education providers, must include supplementary vocational subjects such as rules and mechanisms for job creativity and how to start new projects. Those curricula should also adapt with modern technology standards and the updated changes.

### Abbreviations

MoEHE: Palestinian Ministry of Education and Higher Education.

UCAS: The University College of Applied Sciences.

MoSA: Ministry of Social Affairs.

MoL: Ministry of Labor.

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## دور كليات المجتمع في تنمية مهارات الإبداع والابتكار لدى طلاب التعليم المهني الكلية الجامعية للعلوم التطبيقية كدراسة حالة

اسماء أبو سمرا \*

### ملخص

تهدف هذه الدراسة إلى تعرّف دور كليات المجتمع في تنمية مهارات الابتكار والإبداع لدى الطلاب والطالبات الملتحقين في برامجها المهنية من وجهة نظرهم وفقاً لمتغيرات الدراسة (الجنس، العمر، المحافظة)، وذلك في الفصل الدراسي الثاني من العام الدراسي 2018/2019. إضافة إلى إلقاء الدراسة ضوءاً على الجهود التي تبذلها كليات المجتمع من أجل تطوير مهارات الابتكار والإبداع في برامجهم المهنية المختلفة. ومن أجل تحقيق أهداف الدراسة استخدم المنهج التحليلي الوصفي. كذلك طُوّر استبيان كأداة للدراسة وتوزيعه على مجتمع الدراسة وتحليله باستخدام برنامج التحليل الإحصائي. من أهم نتائج الدراسة أن المتوسط الحسابي لجميع عناصر الاستبيان يصل إلى (3.98). وعليه، فإن الوزن النسبي هو (79.65). وهذا يعني وجود اتفاق كبير على بنود الاستبيان على نحو عام. وتخلص الدراسة إلى عدم وجود فروق ذات دلالة إحصائية بين متوسطات تقديرات أفراد عينة الدراسة في جميع مجالات الاستبيان لدور الكلية الجامعية للعلوم التطبيقية في تطوير مهارات الابتكار والإبداع لدى الطلاب المهنيين وفقاً لوجهات نظرهم، التي تعزى إلى متغيرات الدراسة باستثناء العمر والمحافظة. وتوصي الدراسة بضرورة توفير مجموعة إضافية من المرافق المادية والمعنوية في بيئة المؤسسة المهنية، التي تدعم تعزيز مهارات الإبداع والابتكار لدى الطلاب. كذلك توصي بتدعيم دور الكادر التعليمي في تلك المؤسسات من التقنيين والأكاديميين والمناهج المهنية، وتطوير الممارسات الإدارية والسياسات داخل أقسام التعليم المهني في هذه الكليات.

**الكلمات الدالة:** الابتكار، الإبداع، كليات المجتمع، التعليم المهني، المناهج، الإدارة، السياسات.