Original Article

A Proposed Model to Enhance an Innovation and Entrepreneur at Al-Zaytoonah University of Jordan

Robin Mezher[1], Suhaib Abu Hazeem[2], Basim Alobaydi[3]

[1]Department of Multimedia, Al-Zaytoonah University of Jordan, Amman, Jordan.
[2]Department of Architecture, Al-Zaytoonah University of Jordan, Amman, Jordan.
[3]Department of Graphic Design, Al-Zaytoonah University of Jordan, Amman, Jordan.

[1]Corresponding Author : r.muzher@zuj.edu.jo

Abstract - The research paper presents a proposed model for establishing a center for entrepreneurship and innovation at the Al-Zaytoonah University of Jordan. The center aims to enhance teamwork, stimulate and adopt creative ideas among students, and establish an environment where they may discuss and expand on these ideas. The idea of this center addresses the challenges facing similar centers, such as the high cost and long time to build. The purpose of establishing this center revolves around improving several challenges that similar centers may face. The proposed model of the center is characterized by its modern, low-cost, and flexible design. We used a mixed-methods research design to analyse case studies of successful centers worldwide and then conducted interviews with the target group. The results indicate that the proposed model will enhance students' capabilities and stimulate the development of their creative ideas. This study presents a model that can be developed and improved at the lowest cost and least time-wasting and can be implemented in various contexts. The proposed center has the potential to positively impact the amount of scientific research, thus improving the university's global ratings.

Keywords - Architectural design, Entrepreneur, Innovation, Modelling, Sustainability.

1. Introduction

Innovation and entrepreneurship have grown from just buzzwords to becoming vital forces behind societal advancement and economic prosperity in today's fast-changing world [1]. Universities are becoming increasingly conscious of their responsibility in helping students develop these competencies [2]. This awareness caused the establishment of Entrepreneur and Innovation Campuses (EICs) in universities. These locations are special places where students can develop their thoughts, establish businesses, and turn creative ideas into workable solutions [3, 4]. Nowadays, Universities and industrial sector cooperation play a crucial role in enabling the transformation of knowledge into production and creating value in scientific studies [5]. The innovation and entrepreneur centers aim to bridge creative ideas and the labor sector in general and apply these creative ideas in our community [6, 7].

Looking at the development of innovation and entrepreneurship centers worldwide, it is realized that technological innovation should be encouraged from the earliest stages of creative thought [8]. Therefore, the "systems of innovation" approach has started to be commonly embodied or articulated through technology fostering in universities [9, 10]. Consequently, Universities began to establish centers for entrepreneurship and innovation to promote these ideas and have them adopted by local community institutions [11]. In recent years, the term "Techno Parks" or "Techno-cities" has been seen increasingly in universities [12]. Universities started to establish this concept to merge students on the one hand and companies in society on the other hand, which brings humanity growth and economic competition simultaneously [13]. One of the first academic institutions in Jordan to adopt this concept is the Al-Zaytoonah University of Jordan, where the university was researching the dimensions of the idea in order to implement the practice, which entails putting more of the students' innovative ideas to use instead of disregarding them, and even reaping these benefits for the local and global community as well [14]. The goal of technology is to use it to achieve tasks in the least possible time and effort [15], and this is the idea behind the project to be covered in this research paper, which is the creation of a center for entrepreneurship and innovation in an open area on the campus of Al-Zaytoonah University of Jordan. In [16], there is a clear relationship between innovation and green spaces with trees and natural sunlight, and when ideas are suggested in these conditions, they take on a unique identity. Al-Zaytoonah University of Jordan contains large green areas, more than 29% of its total area, which includes green

grass beds, various gardens, and olive trees that dominate the nature of its permanent greenery [17], this area provides a clean, green environment full of oxygen to foster the creativity of its students. From this standpoint, it came. Unlike previous concepts, the idea of the university's Center for Creativity and Entrepreneurship is to be within this green space. This one is less traditional and will be made up of modern containers or caravans designed so that sufficient light enters them. With the rapid technological change, social and technical environment changes also occur, and students' needs for innovation and creativity centers change. Many studies have been conducted on the importance of innovation and entrepreneurship centers in educational institutions, and positive results have been achieved in specific environments. However, most of these studies focus on the theoretical aspect or are applied in various practical or local universities without considering the social environment and the different needs of students, and within Al-Zaytoonah University of Jordan in particular. A lack of research tests these models in the applied context of innovation and entrepreneurship centers at the Al-Zaytoonah University of Jordan.

2. Literature Review

Building centers in universities is considered a relatively complicated matter and requires time, effort, and sums of money that cause a burden on the universities' budget. According to [18], cooperation between the industrial sector and college students is essential for developing the industrial sector and enhancing the importance of scientific research in societies. Also, the Authors of [18] suggest a model called "Technology Transfer and Development Centre", and this model bridges the gap between the academic field students and the industrial sector and confirms that this approach will enhance the creation of competitiveness at the national and local levels. According to [19], to support society's growth and advancement, university research and private industry have a solid global relationship that helps improve society. Developed countries like China, Ireland, Germany, Korea, India, the United States, and Australia are applying this collaboration in their universities.

In the Kingdom of Saudi Arabia, they added a program called (TIC) to consolidate cooperation between the private sector and university leadership and innovation centres. This program highlights the need for entrepreneurial ideas in society, universities, and private companies. Despite the ease of the idea, as stated [19], it does not face many pivotal difficulties, including the cultural difference between the interests of each sector (academic and industrial). Based on [20], there is a life cycle between innovation, economic growth, and a healthier life. This cycle is facilitated by transforming luxuries into useful goods of high quality and lower cost. Furthermore, the development and stability of a nation's economy depend mainly on academic research. However, with the increasingly dynamic economy, the institutional infrastructure has become ineffective for

transferring university innovations to the labour market, and researchers often face many complications in marketing and financing their creative ideas. To fill this gap, the Proof-of-Concept Centre concept was stated to help capitalize on innovative ideas within the community. In [21], authors focused on promoting innovation within engineering colleges and affiliated universities to enhance their effectiveness. This approach helps to focus on creative ideas in the engineering field, which helps to reduce the challenges facing the commercialization of ideas. However, it also risks the innovations of the non-engineering disciplines. The Von Liebig Centre presents proposals to all University of California San Diego faculty members. This requires a partnership with a faculty member at Jacobs University of Engineering, and this proposal is considered to address this problem.

The Deshpande Centre allows proposals from all faculty members, further complicating the evaluation process. Both centres succeeded due to their extensive relationships with venture capitalists and the increased intensity of university research there. The provision of seed funding, connections with cooperation networks, external funding, consultations, and educational initiatives represents a successful approach to marketing university technology. One of the most critical components of the success of any innovation and development centre is the presence of a university that generates innovative technology that can be marketed and enhances external cooperation. The centre must also include members who can communicate with capital, investment, and local industry owners. The centre's success depends on the strength of its employees and the surrounding social networking infrastructure.

The studies mentioned in this research emphasize the importance of collaboration between academia, industry, and government in promoting entrepreneurship and innovation. By studying these examples and global models, it is possible to understand the challenges universities and educational institutions may face in transferring entrepreneurship and innovation to the market. This proposed model at the Al-Zaytoonah University of Jordan aims to bridge these gaps better. The insights gained from these studies will improve the design of a model tailored to meet the local requirements and the specific context of Al-Zaytoonah University of Jordan and the Jordanian economy in general.

3. Research Objectives

This study aims are the following:
- Fostering innovation and entrepreneurship among students and faculties.
- Developing innovative skills among students.
- Promoting social responsibility and sustainability among students.
- Ensure the development of the Entrepreneurship and Innovation Centre and promote long-term sustainability.

4. Methodology

Research methodologies vary according to the nature of the research and its objectives [22]. This study employed interviews as a research method to know the target group's opinion about the proposed project. The case studies were selected based on specific criteria. The professors were selected based on the diversity of their academic backgrounds and the availability of experience in entrepreneurial and innovative activities. The students were selected based on who were interested in entrepreneurial activities and were present in large numbers at the university, considering the differences in age and gender. The interviews were organized by preparing an interview guide with several open-ended questions covering the main research topics, leaving space for the respondents to express their feelings. The interviews were conducted on the campus of Al-Zaytoonah University in comfortable and quiet places. Each interview lasted approximately 40 minutes, and the participants agreed to be audio-recorded. Then, preliminary plans for the final form of the centre are designed. The benefit of these plans is that they depict the initial structure of the centre in order to avoid possible errors that may be encountered. We used three-dimensional (3D) models. Three-dimensional modelling accurately measures the entire building and achieves the finest design details. It enables the development of any level of detail, regardless of the project size. Additionally, it allows designers to identify potential defects before they turn into major problems, which achieves lower costs and time [23]. This section presents the methodology used in this study. It includes five steps. The first and second steps include studying and reviewing previous studies on establishing innovation centres, also known as Techno Park.

We analyse these studies and examine their errors to avoid their occurrence in the project we envision implementing. In the third step, Data collection, we selected a random group of instructors and students. Faculty members were chosen for their valuable scientific and practical experiences, while the students are considered the target group for this centre. In the fourth step, a qualitative approach was used to collect data. We conducted individual interviews with each participant and recorded them after obtaining their permission to facilitate their analysis later. We chose the interview method because the number of interviewees is small, so conducting interviews with them will be easy and convenient, and it will allow us to obtain the reaction more accurately and in depth towards the idea of establishing the centre. The fifth and final step was analysing the data obtained from the interviewees. We did this by transcribing the sounds into texts, identifying the important and key points, and titling similar ideas to facilitate the process of forming the general idea to be conveyed.

A detailed explanation of the research methodology is provided below:

4.1. Reviewing Previous Studies

We explored how to establish innovation centres similar to the one proposed in this paper. We examined all possible aspects that could be added to this centre to improve its outputs by taking advantage of the strengths and avoiding the weaknesses as much as possible.

4.2. Data Collection

We conducted individual interviews with the students and some teachers to examine their extent of acceptance of the proposed idea and to know their opinions regarding the planned project.

Integrated the Collected Data: We combined similar ideas from all interviews to reach accurate and valuable results. We removed unimportant information and arranged and divided the important information into similar categories.

4.3. Data Analysis

We analysed the data from the personal interviews by audio recording the interview, then we transcribed the interviews by writing the entire interview content to ensure the accuracy of the information, and then we verified the accuracy of the information by reviewing the texts and correcting any possible errors during the transcription of the interviews. Then, we read the texts more than once and wrote down the main ideas mentioned in the interviews. Then, we classified the content of the interviews by putting similar ideas together and identifying the relationship between the main ideas presented. After that, we summarized the results and formulated the conclusions, and the result was ultimately clear and encouraged acceptance by students and professors at the university. Figure 1 presents the research methodology.

Fig. 1 Research methodology

5. Proposed Model

The importance of innovation and entrepreneurship centres within universities lies in improving the penetration of innovation culture in universities among students and faculties. Innovation and entrepreneurship centres provide an active environment for students to develop innovative and creative ideas, allow them to share their ideas and creative solutions among themselves, and work on developing them [24]. The proposed centre aims to provide sufficient and comfortable space for students to share and develop their ideas in a mentally comfortable place surrounded by green space. It provides the amenities students may need, such as comfortable furniture, high-speed internet, flexible hours, and a location close to most university colleges.

The centre is designed using containers or caravans following the principle of flexibility, less cost, and simple modern design, and it is also designed in line with providing basic comfort for students. [25] The containers or caravans have windows to offer natural sunlight and provide a comfortable and healthy environment. The proposed centre will be prepared with modern and comfortable furniture to increase the students' comfort. Each container or caravan consists of two desks and a computer for each desk for flexible meetings. There is also an open space with comfortable chairs, which provides for joint work between more than one student to share and develop ideas. Four-seater seats are also available for group work of more than two students. A student office management specialist will manage the centre to organize and facilitate the use of their offices and meetings. The design includes energy-efficient lighting, a green roof, and solar panels as major elements of sustainability. The model is expandable in the future to handle rising demand and fresh technology developments. A potential challenge is the large number of students coming to the Innovation and Entrepreneurship Centre. The Centre will implement a flexible scheduling system and provide regular awareness sessions to integrate disciplines to solve this problem. The proposed center is expected to make a significant difference in enhancing the university's research capabilities, encouraging innovative entrepreneurial activities, and demonstrating tangible results such as patents and increased research activities, which will contribute to enhancing the university's economic position and improving the university's reputation globally and locally.

We used a 3D modelling system to visualize the shape of the centre on the ground in order to increase design productivity and flexibility and to facilitate evaluation and modification of the final shape.

Maya, AutoCAD, and 3D Max technology are used for the design. The basic idea of this project is to save time, effort, construction cost, and space, considering the place's aesthetics and the student's satisfaction. Images show the preliminary design and each of them is discussed. Figure 2 shows the preliminary interior design for the container.

| (a) Left Sight | (b) Right Sight |

Fig. 2 The preliminary interior design

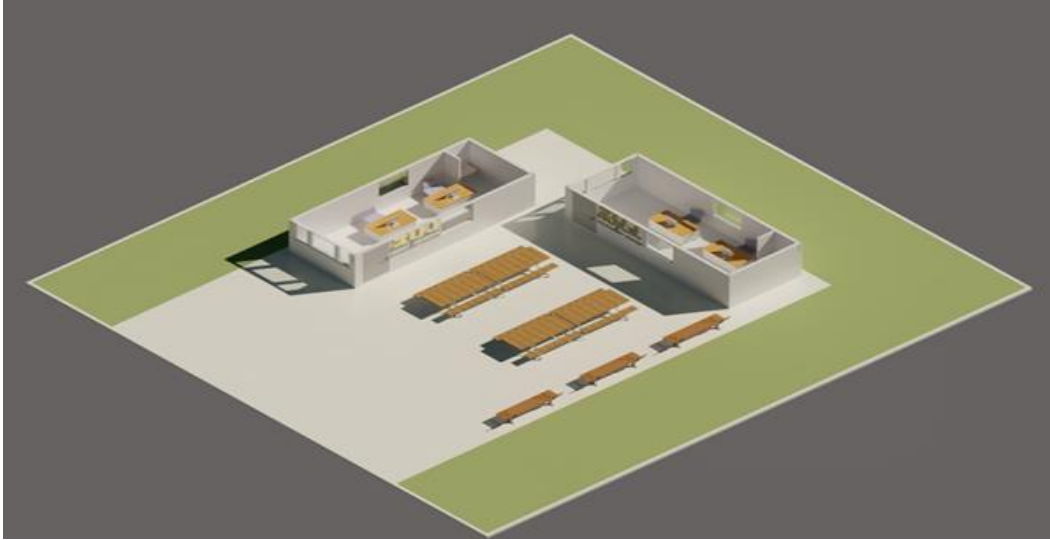| (a) North Façade | (b) East Facade |

Fig. 3 Exterior design

Fig. 4 Floor Plan

As shown in Figure 2, the preliminary interior design for the containers or caravans, Grey combined with wood, gives a balanced, comfortable, modern, and elegant feel. Grey is not distracting, making it a good background color for an innovation center. Adding wood to the design gives the space a natural feel and can create a rustic, relaxing atmosphere that increases students' creative ideas. The design is practical, comfortable, and flexible. Students can move around the place and move the furniture easily to suit their requirements and needs.

We also notice the proportionality of the furniture sizes with the centre's total area, which is considered relatively small. The size and number of furniture in the center were considered to provide the opportunity to move smoothly in the center. The furniture will also be of high quality and durable. Each container or caravan will be equipped with two desks and a seat to allow periodic movement to encourage physical well-being and move their body quickly from time to time. The windows' location has been carefully considered so that sunlight can be accessed well, as exposure to natural light contributes to improving performance in the workplace. Office chairs will be carefully chosen to ensure the comfort of students. The furniture will be portable so that students can rearrange it.

As shown in Figure 3, the exterior design for the entrepreneur and innovation center, we notice that the place was designed in a modern, comfortable, and flexible way that is compatible with the environment and the surrounding green space at Al-Zaytoonah University of Jordan. It is also suitable for the architectural style of the university, as it adds beauty to the center and the place in general. The centre's design from shipping containers or caravans adds an element of innovation and creativity, stimulating out-of-the-box thinking for students. Recycling these containers also contributes to reducing waste and enhancing the value of environmental sustainability. Using containers also reduces the time used for construction, as it requires much less time than traditional construction. It also provides a quiet space to increase students' concentration in the center. As shown in Figure 4, the floor plan of the proposed project represents a single-floor structure containing two containers or caravans and an open area consisting of wooden chairs and tables. Each container contains three windows on the north, south, and west sides, while the door is on the south side. In addition, a wash basin is situated in each container at the eastern edge to offer comfort and privacy. A wall separates the office area and the wash basin to ensure full privacy.

The floor plan can be seen in Figure 4. The proposed centre is small but utilized to the maximum extent possible. It is organized in line with the student's requirements, including private office rooms for meetings and brainstorming and open spaces for exchanging ideas between students, which improves the productivity of creative ideas and proposed solutions. The containers or caravans contain a solar energy system and advanced computers with fast performance, high-quality printers, and advanced features. They also contain high-speed internet. Students can also enjoy their coffee in the open space. A coffee corner will be provided to serve the students' comfort, which will help them relax and stimulate the production of more creative ideas. The proposed centre will provide recycling stations, and energy-saving resources will be used for lighting. The design, as it is flexible, allows for any future improvement to be added quickly and easily.

6. Conclusion
The main objective of establishing the proposed Innovation and Entrepreneurship Centre model is to increase creative ideas among students at the university in a modern

way that matches their requirements at the lowest possible cost and time. We will use shipping containers or caravans to promote the principle of recycling, and we will provide this centre with high-efficiency computers, advanced printers, and high-speed internet service. The centre can contribute to increasing creative ideas and the productivity of research activities, improving the university's general reputation and attracting students to enroll in it. One of the challenges that may be faced is the increasing demand for the centre. In order to facilitate this process, we will prepare a flexible schedule that can accommodate the largest possible number of students from different colleges. In the future, the centre can be developed and its area increased, as transporting and expanding containers or caravans is easier than traditional construction processes. The proposed model may focus on limited specializations at Al-Zaytoonah University of Jordan, such as engineering and business. However, other universities may adopt a multidisciplinary model that includes more than the specializations proposed in this study. Partnerships can also be established with local or regional universities and companies to promote applied research. One of the challenges that may be faced in implementing the proposed model is the insufficient physical space to accommodate students interested in entrepreneurship and innovation. However, local business incubators and innovation centres can be used to facilitate access to equipment for the largest possible number of interested students.

In conclusion, establishing this centre represents a unique opportunity for the university in creative education and innovation. It enables the university to increase the number of creative students, adopt their ideas, and build a creative generation that will lead the future of their society. We deeply believe in the importance of innovation in facing future challenges, so we worked on developing this project.

Acknowledgments

References

[1] Mary Sue Schmaltz, "The Power of Unreasonable People: How Social Entrepreneurs Create Markets that Change the World," *Journal of Nonprofit and Public Sector Marketing*, vol. 22, no. 2, pp. 152-153, 2010. [CrossRef] [Google Scholar] [Publisher Link]

[2] Laura Alvarez Marques, and Cristina Albuquerque, "Entrepreneurship Education and the Development of Young People Life Competencies and Skills," *ACRN Journal of Entrepreneurship Perspectives*, vol. 1, no. 2, pp. 55-68, 2012. [Google Scholar] [Publisher Link]

[3] Susan T. Kater, "Unrelenting Change, Innovation, and Risk: Forging the Next Generation of Community Colleges," *Community College Journal of Research and Practice*, vol. 41, no. 11, pp. 761-763, 2017. [CrossRef] [Google Scholar] [Publisher Link]

[4] Robert J. Sternberg and Wendy M. Williams, *How to Develop Student Creativity*, Association for Supervision and Curriculum Development, 1250 North Pitt Street, Alexandria, VA 22314, pp. 1-59, 1996. [Google Scholar] [Publisher Link]

[5] Jan Youtie, and Philip Shapira, "Building an Innovation Hub: A Case Study of the Transformation of University Roles in Regional Technological and Economic Development," *Research Policy*, vol. 37, no. 8, pp. 1188-1204, 2008. [CrossRef] [Google Scholar] [Publisher Link]

[6] Asa Lindholm Dahlstrand, and Lois Stevenson, "Innovative Entrepreneurship Policy: Linking Innovation and Entrepreneurship in a European Context," *Annals of Innovation and Entrepreneurship*, vol. 1, no. 1, pp. 1-15, 2010. [CrossRef] [Google Scholar] [Publisher Link]

[7] Mohammad Hasan Altarawneh et al., "The Relationship Between Cross-Cutting Factors and Knowledge, Learning Outcomes, and Skills in Dual Degree Programs," *Journal of Theoretical and Applied Information Technology*, vol. 102, no. 8, pp. 3410-3422, 2024. [Google Scholar] [Publisher Link]

[8] Ameen Shaheen et al., "Wearable Processors Architecture: A Comprehensive Analysis of 64-Bit ARM Processors," *International Journal of Interactive Mobile Technologies (IJIM)*, vol. 18, no. 13, pp. 82-95, 2024. [CrossRef] [Google Scholar] [Publisher Link]

[9] Mohammad Hasan Altarawneh, and Manal Subhi Hassan, "Readiness of Higher Education Institutions for E-learning Case of Jordanian Universities," *International Journal of Advances in Soft Computing and its Applications*, vol. 14, no. 3, pp. 174-188, 2022. [CrossRef] [Google Scholar] [Publisher Link]

[10] Johan Schot, and W. Edward Steinmueller, "Three Frames for Innovation Policy: R&D, Systems of Innovation and Transformative Change, *Research Policy*, vol. 47, no. 9, pp. 1554-1567, 2018. [CrossRef] [Google Scholar] [Publisher Link]

[11] Scott Shane, *Economic Development through Entrepreneurship*, Government, University and Business Linkages, Edward Elgar Publishing, pp. 1-264, 2007. [Google Scholar] [Publisher Link]

[12] Khalid Mohammad Jaber et al., "E-Learning Mobile Application Evaluation: Al-Zaytoonah University as A Case Study," *International Journal of Advances in Soft Computing and its Applications*, vol. 13, no. 3, pp. 88-99, 2021. [CrossRef] [Google Scholar] [Publisher Link]

[13] Ahmet Lutfi Tunçel, Özcan Arslan, and Emre Akyüz, "An Application of Fuzzy AHP Using Quadratic Mean Method: Case Study of ENC Preparation Process for Intended Voyages," *Journal of ETA Maritime Science*, vol. 11, no. 1, pp. 56-66, 2023. [CrossRef] [Google Scholar] [Publisher Link]

[14] Henry Etzkowitz, "The Entrepreneurial University Wave: From Ivory Tower to Global Economic Engine," *Industry and Higher Education*, vol. 28, no. 4, pp. 223-232, 2014. [CrossRef] [Google Scholar] [Publisher Link]

[15] Mahdi Al Amri, and Mohammed Amin Almaiah, "Sustainability Model for Predicting Smart Education Technology Adoption Based on Student Perspectives," *International Journal of Advances in Soft Computing and its Applications*, vol. 13, no. 2, pp. 60-77, 2021. [Google Scholar] [Publisher Link]

[16] Dian Handayani et al., "Spatial Empirical Best Predictor of Small Area Poverty Indicator," *International Journal of Advances in Soft Computing and its Applications*, vol. 16, no. 2, pp. 103-122, 2024. [Google Scholar] [Publisher Link]

[17] Al-Zaytoonah University- Google Search, Google.com, 2024. [Online]. Available: https://www.zuj.edu.jo/

[18] A. Akaydın, "The Role of Technoparks in the Innovation Ecosystem and A Model Proposal for Its Development: Technology Transfer and Development Center," *International Journal of Business Science and Applications*, vol. 3, no. 1, pp. 80-103, 2023. [Google Scholar] [Publisher Link]

[19] Mohammad S Khorsheed, and Mohammad A Al-Fawzan, "Fostering University-Industry Collaboration in Saudi Arabia Through Technology Innovation Centers," *Innovation*, vol. 16, no. 2, pp. 224-237, 2014. [CrossRef] [Google Scholar] [Publisher Link]

[20] Christine A. Gulbranson, and David B. Audretsch, "Proof of Concept Centers: Accelerating the Commercialization of University Innovation," *The Journal of Technology Transfer*, vol. 33, pp. 249-258, 2008. [CrossRef] [Google Scholar] [Publisher Link]

[21] Ohchan Kwon, *Bridging the Innovation Gap through Funding: The Case of MIT Deshpande Center*, Massachusetts Institute of Technology, pp. 1-90, 2013. [Google Scholar] [Publisher Link]

[22] Luke Pittaway et al., "Networking and Innovation: A Systematic Review of the Evidence: Networking and Innovation: A Systematic Review of the Evidence," *International Journal of Management Reviews*, vol. 5-6, no. 3-4, pp. 137-168, 2004. [CrossRef] [Google Scholar] [Publisher Link]

[23] Sawsan Abutabenjeh, and Raed Jaradat, "Clarification of Research Design, Research Methods, and Research Methodology: A Guide for Public Administration Researchers and Practitioners," *Teaching Public Administration*, vol. 36, no. 3, pp. 237-258, 2018. [CrossRef] [Google Scholar] [Publisher Link]

[24] Kitara Kadhim Al-Shayeh, and Muzhir Shaban Al-Ani, "Efficient 3D Object Visualization via 2D Images," *IJCSNS International Journal of Computer Science and Network Security*, vol. 9, no. 11, pp. 234-239, 2009. [Google Scholar] [Publisher Link]

[25] Romina Cachia et al., "Creative Learning and Innovative Teaching: Final Report on the Study on Creativity and Innovation in Education in the EU Member States," *Publications Office of the European Union*, pp. 1-61, 2011. [CrossRef] [Google Scholar] [Publisher Link]