

## Innovative Methods in Applied Vocational Education in Educational Institutions in the United Arab Emirates

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### Abstract

*The study aims to the challenges of using innovative technological methods in vocational education; the impact of using this innovative paper on student achievement was investigated from the point of view of teachers in schools in the United Arab Emirates. A sample of (60) male and female teachers in the city of Abu Dhabi in the Emirates was selected by random sampling method, this work used a random survey, this survey consists of two parts. The first section aims to collect personal data about the studied sample (age, educational qualification, gender, and experience); the second section aims to collect data on the challenges of using innovative technological methods in vocational education from the sample's point of view. Through the study, the researcher concluded that the challenges related to technological innovation in teaching vocational education are moderate from the point of view of teachers, It turns out that the most serious challenges related to the use of technology are mainly challenges related to technological applications, challenges related to school capabilities, and challenges related to curricula, It was found that there are challenges that significantly affect student achievement from the perspective of VE teachers, The researcher in this study recommends developing the technological infrastructure in government schools to enable vocational education teachers to use technology in the teaching and vocational and applied training.*

**Keywords:** vocational training, students, advanced technology, vocational education, United Arab Emirates.

### 1. Introduction

The last several years have seen a significant technology revolution take place in the world. Whether in the classroom or at home, employing technology is a necessary part of today's educational process (Al-Derbashi & Abed, 2017). This is true for vocational education as well (VE). Students' attention in the classroom is partly drawn by the use of

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technology in education, especially virtual reality (VE). It helps to make lecture halls and classrooms better places to study. It facilitates information gathering for both teachers and students (Pazilah et al., 2019). It has become simpler for educators to impart knowledge and concepts to kids in a way that is more successful than it was in the past.

The most significant institutions in society are those that provide education. They must be utilized. Contemporary technology to provide excellent instruction. Using contemporary technology has a significant impact on how education is transformed and how good it is. This has the potential to inspire kids to learn more. It may be applied to information delivery with increased precision and speed. That will help educational institutions raise the accomplishment levels of their pupils. (2019, Ahmed).

Al-Olayan (2019) asserts that one characteristic of the modern period is the utilization of contemporary technology. It's one of the issues facing the younger generation. It is a need in the workplace for many kinds of businesses. In educational institutions, it is essential. It is believed that the field of education is the most significant one in society. It is greatly impacted by the development of contemporary technology and technical breakthrough. The employment of contemporary instructional technology in all educational levels is now demanded by the public. Numerous causes have led to an increase in this kind of demand. Among these are the following: the old educational system's inability to produce graduates who can keep up with the speed of fast progress. Among these are: the inability of the conventional educational system to produce productive members of society (Saleh, 2010). Students were able to overcome the temporal and geographical constraints through the intensive use of computer simulation technology, multimedia technology, virtual reality technology, and remote education technology. Additionally, it enabled students to better manage their time and accelerate their learning in particular. Wide access to global information sources will be provided via distant education (Li & Fu, 2014). The goal of vocational education is to provide students with the skills necessary to work as technicians or as skilled craftspeople. It seeks to enhance people's abilities. These skills include those in management, technology, manufacturing, customer service, and other areas (Luo, 2011). Poor technology skills are one of the issues with utilizing technology in the field of education, according to Zaidan (2015). To develop these abilities, one had to supply employees with training.

According to Ahmed (2019), there are several challenges associated with implementing contemporary technology in the sphere of education. Among these challenges are: providing teachers with enough training to use contemporary technology in the classroom. Among these are: some educators' reluctance to adopt new, contemporary teaching techniques. Among these are: the expensive price of many instructional gadgets, particularly the most recent models. Among these are: the absence of computer programs that are suitable for the type of curriculum being employed. Among them is the fact that the majority of schools lack an adequate IT infrastructure. Among them are the following: some educators who aren't persuaded of the long- and short-term advantages of using contemporary technology in the classroom. Today, a number of topics pertaining to secondary education and the field of educational technology are discussed together. Vocational education is also connected to a number of those difficulties. Availability of software and equipment in secondary school vocational courses is one example of such a problem. The constant advances in technology bring about constant changes in education. Innovations in technology have been growing quickly. Nonetheless, facilities, curriculum, and equipment related to education develop gradually. The swift adaptation of educational practices is not impeded by any economic need. Nonetheless, there are similar requirements in the business world. As a result of this distinction, several problems surfaced (Williams, 2015).

Students will be able to practice and display their abilities in appropriate workshop settings. Pros and downsides of multidisciplinary support come from the viewpoint of the planners. The learning process of pupils is impacted by both virtual and real-world

contexts (Bano et al., 2022). The circumstances around education, employment, and lifelong learning have been evolving globally, according to Koehler & Drummer (2018). Teachers have been dealing with difficulties brought on by their heavy reliance on digital media. Professional training, according to Banagiri et al. (2021), mostly consists of practical lessons that provide students with experiences and information closely relevant to their future careers. It makes pupils qualify for and enables them to obtain greater employment prospects. The following list of five major issues is provided by Banagiri et al. (2021): Infrastructure: Adequate infrastructure is necessary to guarantee that the material is taught in an efficient manner. It is necessary to guarantee that all students have equitable access to educational opportunities. Administration: To enable individuals to use technology, sufficient resources and assistance must be offered. Education: ICTs must be put to use in order to raise awareness and provide higher-quality education. Instruction: To use information and communication technologies (ICTs) to teach pupils, educators must have adequate training. Content Creation: It is believed that content production takes time. It is also thought to be pricey. The content has a certain amount of shelf life. VE is linked to an issue that is considered crucial in terms of upholding and creating high-quality content.

Diverting students' attention is one of the possible drawbacks of using technology to offer virtual education. They consist of: making plagiarism more accessible to pupils. Among these are impeding the speaking and communicating abilities of underachievers. Among these are limitations on kids' ability to think. Among them are impeding students. From considering problem-solving strategies, since students will encounter online solutions for a variety of issues (Pazilah et al., 2019).

These difficulties have an impact on how technology is applied in VE. As a result, they have an impact on pupils' performance in the elementary classrooms where the VE curriculum is taught. It should be mentioned that VE instructors encounter several difficulties when attempting to use technology to teach VE in the classroom. VE curriculum call for the use of contemporary tools, technology, and teaching methods that help instructors deliver courses in an efficient and expert manner. Regarding the significance of these technologies and how they affect student performance, a query surfaced. Concerning the obstacles limiting the use of technology in vocational education, several questions surfaced. Consequently, the issue with this study is In responding to the following query:

What difficulties do educators in The United Arab Emirates, The United Arab Emirates have when implementing technology in the classroom, and how does this affect students' academic performance?

More precisely, the following goals constitute the study article's objectives:

- 1) The purpose of the study paper was to examine the difficulties that The United Arab Emirates, The United Arab Emirates an instructors had when utilizing technology in VE.
- 2) The purpose of this study was to examine, from the perspective of the instructors in The United Arab Emirates, The United Arab Emirates, how the aforementioned difficulties affected the academic performance of the children.

The following two queries are addressed in this study in order to achieve those goals:

First Question: How serious are the difficulties associated with employing technology in VE, and how do they affect the students' accomplishment as perceived by the educators at the United Arab Emirates, The United Arab Emirates and schools?

Question No. 2: Does the respondents' perception of the seriousness of the issues they are facing change significantly based on their gender or level of education?

The relevance of VE makes this study noteworthy. VE helps to expand the quantity of jobs that are accessible in the labor market. It's important because of the importance of

the technology revolution and the importance of using technologies to provide VE. It is important because it addresses the issues surrounding the use of technology in education. Because it's important to gauge how serious the obstacles are that prevent people from using technology in VE from the viewpoint of the VE instructors. The relevance of the study's findings makes it noteworthy. These findings are crucial for directing vocational education instructors and supporting them in overcoming barriers and difficulties when utilizing technology in the classroom by decision-makers like school principals.

Several major words used in this work are described below:

Technology-related challenges are those that make it more difficult to achieve the objectives of implementing information technology curricula. These difficulties include difficulties with technological applications, difficulties with curriculum, and difficulties with pupils. These consist of issues with teachers, issues with the capacities of the school, and issues with the management of the school. Among these are funding-related difficulties.

Career education: It alludes to a procedure that establishments arrange to supply the labor market with competent laborers (Ariyani et al., 2021).

The following is a list of this study's limitations:

1. Spatial limitations: The schools in The United Arab Emirates' The United Arab Emirates District are the focus of this study.
2. Time constraints: In 2023, the study was carried out.
3. Human limits: The study's target audience is vocational education course instructors, or VE teachers.
4. Limitations: It is not possible to generalize the findings of this article. This is due to the fact that the sample size and type have an impact on the findings in this investigation. This is so because the nature, kind, and components of the instrument have an impact on the outcomes. It's because the temporal and geographical boundaries have an impact on the outcomes.

## 2. Review of Literature

Numerous research papers have emphasized the importance of utilizing technology in vocational education and training, as well as the difficulties associated with its implementation.

The difficulties in providing technical and vocational education and training (TVET) in Pakistan were examined by Bano et al. in 2022. They used both exploratory and descriptive methods. They went with a qualitative strategy. Information was gathered from five hundred (500) workers and students. Teachers and TVET job holders are among these employees. It was discovered that there are significant finance and infrastructure issues facing TVET institutions. It was discovered that insufficient skills characterize TVET in Pakistan. The latter nation's TVET is characterized by low industrial linkages, a high unemployment rate, and inadequate teacher preparation. It is tagged. by the absence of female participation.

The challenges that basic education institutions have in using technology to improve the professional performance of their instructors were examined by Zeno et al. in 2022. Their goal was to determine the biggest issues and obstacles that, in the eyes of the instructors, restrict the use of technology in the classroom. The researchers collected data from a sample of many basic education instructors in order to fulfill the objectives of the study. There are one hundred male and female teachers in this sample. There was a questionnaire used to gather data. The success of incorporating technology into the

educational process was shown to be significantly influenced by the instructors' readiness and their capacity to handle educational technology. It's crucial to provide educators with technology training. It was discovered that teacher professional development plans and programs need to receive greater focus. Technology use in education has been shown to be a societal need that has to be satisfied. Professional and educational demands need this utilization. It was discovered that the biggest obstacle to the use of technology to provide education is teachers' inadequate professional training. According to Bonaire et al. (2021), the ICT revolution made intellect a desirable commodity. The pace of economic growth in the modern economy is mostly determined by people's cerebral capacity as opposed to their physical power. The hiring of competent workers has a major impact on how much economic progress is achieved by individuals. It is mostly impacted by people's desire to keep learning. Thus, ICT integration into VE and the educational system has many beneficial effects on the processes of teaching and learning. It was discovered that ICTs play a big part in providing higher-quality VE. Because of this, educators need to exercise caution while introducing ICT into the classroom. It should be mentioned that there will be a number of issues with this incorporation. Al-Maamari (2019) assessed how educators and learners felt about utilizing contemporary technology tools. He conducted the research in the high-tech schools in Nouakchott and Sana'a. He gathered information by asking instructors, parents, and students open-ended questions. It was determined that using contemporary teaching practices had an impact on the school community. Supports the academic process in the classroom. The opinions of the teachers differ. The usage of those tools piqued the curiosity of several educators. Such utilization did not pique the interest of other educators. It was discovered that the school community faces a number of challenges. One of these challenges is that instructors do not have the resources or tools necessary to use the contemporary technology. They consist of: the inadequate use of ICTs by certain educators as a result of inadequate administration, motivation, and training

From the perspective of the secondary school teachers, a city in The United Arab Emirates, Ahmed (2019) investigated the extent to which contemporary technologies are used to teach life sciences. He applied the analytical descriptive method. An inquiry form was created to gauge how well these technologies are being used to educate certain subjects. (88) Secondary school teachers, The United Arab Emirates, make up the sample. The study came to the conclusion that there is a moderate use of these technologies in the teaching of these subjects. Regarding the respondents' attitudes, neither gender nor experience significantly differs from the others. For the benefit of those who work private schools, there are notable disparities in the respondents' opinions that may be linked to the kind of school.

Al-Olayan (2019) provided insight into the application of contemporary technology in the teaching profession. He investigated how this kind of use affected the standard of instruction. He also discussed the benefits and drawbacks that come from using contemporary technology for field instruction. Based on the findings, it was discovered that integrating information technology into the teaching and learning process can alter several areas of education. It was discovered that the future of education would be impacted by the use of contemporary technology in the classroom.

Issa and Saleh (2019) investigated the challenges faculty members face while utilizing contemporary educational tools. He investigated if there were disparities in the opinions of the respondents that may be linked to training in science, academia, experience, or specialty. The College of Basic Education of Al-Mustansiriya University provided the sample. Data from the intended sample was gathered using a questionnaire. The intended sample is made of of has one hundred (100) instructors in it. It was discovered that there are a few barriers that prevent teachers from using educational technology to help pupils learn. The absence of the infrastructure and equipment that are required is the biggest

barrier. Additional challenges include of inadequate training programs provided to educators about the use of educational technologies in the delivery of instruction.

Zaidan (2015) investigated the issues that prevent technology from being used to offer education from the viewpoint of Arabic language instructors in Ramadi, Iraq, during the preliminary phase. A survey consisting of fifty-three items was created in order to achieve this goal. Information was gathered from eighty-eight (88) educators. It was discovered that the seriousness of the issues that the users The utilization of technology in education is highly valued by Arabic language instructors working in preparatory institutions. The concerns pertaining to the instructors are of a modest level. The concerns pertaining to pupils are of a modest level.

In Damascus, Syria, Hamid (2014) investigated the impact of computer games on second-graders' scientific education. Data from 120 male and female elementary school pupils was gathered. It was discovered that playing instructional video games is a more effective way to learn than traditional classroom instruction. It was discovered that the inclusion of eye-catching graphics and engaging audio and visual elements in instructional computer games helps to grab students' attention.

(2013) Murad investigated how much educators at the Directorate of Education in the It is made up of (88) Nablus public school teachers. It was discovered that there are several significant challenges pertaining to the academic material. The challenges facing kids are really serious. The challenges pertaining to the circumstances of the educational environment are modest in intensity. The challenges faced by educators are not that serious. It was discovered that there are disparities in the respondents' opinions that are connected to both gender and the quantity of technology-related training programs taken.

This research and the previously stated studies have certain distinctions as well as commonalities. In terms of the instrument, this research is comparable to several of the previously stated investigations. Comparable to this research, Murad (2013), Ahmed (2019), and Zeno et al. (2022) employed a survey. Ahmed (2019), Murad (2013), and Zeno et al. (2022) employed a descriptive analytical technique, which is comparable to our work.

The subject matter of this study is different from that of the previous investigations. More specifically, the goal of this paper was to look into the difficulties associated with employing technology in vocational education (VE). It looked into how they affected kids' academic performance from the viewpoint of the teachers in the United Arab Emirates schools. The spatial constraints of this investigation are different from those of the previously stated studies. Specifically, it took place in The United Arab Emirates.

### **3. Methodology**

**Approach** The research used the descriptive analytical method. **Data Collection Methods** The required data was collected through the following sources: Secondary sources of data: They include: the relevant books, theses, dissertations, and research on the subject of the study. Primary source of data: It's represented in the data obtained through a questionnaire.

#### **3.1 Population**

The population consists of all VE teachers who work in The United Arab Emirates.

#### **3.2 Sample**

The sample includes seventy seven (60) teachers who were chosen randomly. Those teachers are VE teachers who were working in The United Arab Emirates; Data about the targeted sample is shown below.

Table 1. Data about the Sample (Gender and Academic Qualification)

	N	Percent (%)
male	35	58%
female	25	42%
total	60	100%
bachelor degree	47	78%
diploma degree	13	22%
total	60	100%

### 3.3 Instrument

To investigate how difficult it is for instructors to use technology in VE and how this affects their perception of students' academic performance. The questionnaire, a research instrument, was created. There are two components to the survey:

1. Data on the demographic characteristics (gender and educational background) are gathered in the first part.
2. Data on the targeted issues are gathered in the second part. These problems include those pertaining to technological applications, curricula, students, teachers, school capacities, administration, and finance. The extent to which educators view the difficulties associated with implementing technology in career training. The five-point Likert scale was used to examine these attitudes.

### 3.4 Reliability

The Cronbach alpha coefficient values were computed. They were computed to assess the questionnaire's dependability. The Cronbach alpha coefficient has a total value of (0.901). This number suggests that the tool has a high level of dependability. This is due to the fact that Alderbashi and Moussa (2022) added that it is bigger than 0.70.

### 3.5 Statistical Analysis Methods

Software called SPSS was used to examine the data. It was applied in conjunction with a number of statistical techniques. The following are these techniques:

- Frequencies and percentages: These figures were computed to provide a concise explanation for the sample participants. This description is related to the demographic information.
- Means and standard deviations: The responses of the respondents to each paragraph were determined using these data. They made it possible for the researcher to determine the attitudes of the sample participants.
- The value of the Cronbach's Alpha coefficient was derived by the researcher to assess the tool's dependability.

A multiple variance analysis was performed to see if there were any gender-related disparities in the respondents' opinions.

### 3.6 Criteria for Classifying Means

The criteria presented in the lines below were used for classifying the means (Aldbashi, 2021): Low: 1.00 to 2.33 Moderate: 2.34 to 3.67 High: 3.68 to 5.00 Results and Discussion Results and Discussion Related to Question No. 1 Question No. 1: What is the severity of the challenges of using technology in VE and their impact on the students' achievement from the teachers' view in the schools in The United Arab Emirates, The United Arab Emirates?n To offer an answer to the question that's shown above, means,



and standard deviations were calculated. They were calculated for all the target areas: challenges related to technology applications, challenges related to curricula, challenges related to students, challenges related to teacher, challenges related to the school capabilities, challenges related to the school administration and challenges related to funding). Those values are shown below:

#### 4. Results and Discussion

##### Results and Discussion Related to Question No. 1

Question No. 1: What is the severity of the challenges of using technology in VE and their impact on the students' achievement from the teachers' view in the schools in The United Arab Emirates, The United Arab Emirates?

To offer an answer to the question that's shown above, means, and standard deviations were calculated. They were calculated for all the target areas: challenges related to technology applications, challenges related to curricula, challenges related to students, challenges related to teacher, challenges related to the school capabilities, challenges related to the school administration and challenges related to funding). Those values are shown below:

Table 2. Means and Standard Deviations for the Targeted Areas

N	Area	(M.)	(Std.)	RANK	LEVEL
1	The challenges related to technological applications	3.56	0.88	1	Moderate
5	The challenges related to school capabilities	3.47	0.86	2	Moderate
2	The challenges related to curricula	3.45	0.87	3	Moderate
4	The challenges related to teachers	3.39	0.77	4	Moderate
3	The challenges related to students	3.38	0.95	5	Moderate
7	The challenges related to funding	3.21	0.91	6	Moderate
6	The challenges related to school administration	3.18	0.87	7	Moderate
	Total	3.44	0.86		Moderate

According to Table (2), the findings indicate that instructors perceive a moderate level of difficulty with the employment of technology in the VE sector. The total mean (3.44) with a standard deviation (0.86), which is moderate, indicates that the researcher's findings on the degree of problems instructors face while using technology in VE and how those challenges affect students' success from the teachers' perspective in The United Arab Emirates District schools in The United Arab Emirates are moderate.

This indicates that instructors of vocational education in public schools think there are barriers and difficulties when it comes to using technology in the classroom. As a result, it has a direct impact on kids' academic success.

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This indicates that instructors of vocational education in public schools think there are barriers and difficulties when it comes to using technology in the classroom. As a result, it has a direct impact on kids' academic success. The greatest average (3.56) is seen in the difficulties pertaining to technological applications. For the later difficulties, the standard deviation is 0.88. The (school administration-related difficulties) had the lowest mean (3.18). For those problems, the standard deviation is (0.87). The study's findings revealed the following sequence of difficulties in using technology in vocational education that had an impact on students' performance:

Difficulties in Using Technology,

Obstacles Associated with Academic Capabilities, (3) Challenges with Curriculum, (4) Teacher-Related Challenges, (4) Issues Concerning Students, (5) Financial Challenges; (6) Administration-Related Challenges in Schools. The reason for the latter outcome is that The United Arab Emirates's vocational public schools, and The United Arab Emirates in particular, have undergone various upgrades. These advancements resulted in the removal of the challenges that VE faced in those schools. Among them is the provision of contemporary workshops in labs. These findings support Ahmed's (2019) conclusion that the degree of contemporary technology utilization in life science education was between medium and average. According to Bano et al. (2022), TVET institutions are now plagued by financing shortages and infrastructure issues. According to Al-Maamari (2019), the school community faces a number of challenges, including a shortage of supplies and the usage of contemporary technology by instructors. According to Issa and Saleh (2019), there are a few barriers that prevent faculty members from using educational technology in their classrooms. The application of technology in the VE industry and overcoming its challenges in The United Arab Emirates will take the lead in producing favorable outcomes. They will result in The United Arab Emirates providing higher-quality VE. They will result in instructors and students at The United Arab Emirates's vocational schools achieving success. These findings are in line with those of Zeno et al. (2022), who discovered that one of the key elements in improving teachers' professional performance in the classroom is their effective use of educational technology. Information and communication technologies (ICTs) have many beneficial effects on the teaching and learning processes when they are integrated into vocational and technical education and the educational system, according to Banagiri et al. (2021). According to Al-Olayan (2019), we may alter several facets of education by utilizing information technology in teaching and learning. According to Hamid (2014), playing educational video games on a computer is superior to the customary teaching approaches.

4.2 Answers to and Discussion of Question No. 2

Question No. 2: Does the respondents' perception of the seriousness of the issues they are facing change significantly based on their gender or level of education?

The averages and standard deviations were computed as indicated in the table (3) in order to determine the significance of the variations in the degree of challenges that teachers have when utilizing technology in vocational education and their impact on students' achievement from the teachers' point of view attributed to (gender, or academic qualification).

Table 3. Means and Standard Deviations Related to (Gender, or Academic Qualification).

Variable	Category	No	M	S.D
Gender	MALE	35	3.67	0.85
	Female	25	3.49	0.92
Academic qualification		47	3.53	0.84
	Diploma	13	3.28	0.86

Table (3) suggests that there may be variations in instructors' perceptions of the degree of difficulty in integrating technology in VE and how those barriers affect students' academic performance based on factors such as gender or academic. The findings indicate that there are statistically significant variations in the means of how seriously instructors take the obstacles of integrating technology in vocational education and how those challenges affect students' progress, particularly for male students and bachelor's degree holders. These findings demonstrate that instructors with a bachelor's degree are more aware of the difficulties in applying technology in vocational education than their colleagues with a master's degree, and that men are more conscious of the obstacles that prevent the use of technology in VE. who, from the perspective of the research sample, hold a diploma.

These outcomes are in line with According to Ahmed (2019), there are statistically significant differences from the instructors' point of view related to school, however there are no statistically significant differences regarding the degree of employing contemporary technology in scientific instruction related to gender and years of experience. Shtawi (2013) discovered that the arithmetic averages of the challenges faced by IT teachers related to the gender variable and the variable number of technology-related training courses varied statistically significantly.

## 5. Conclusion

According to the findings, instructors see a modest degree of difficulty with the application of technology in the VE sector. People need to go over the obstacles preventing the usage of technological alocs in the realm of VE in order to get favorable outcomes. The ones that are primarily connected to technical applications, school capacities, and curriculum constitute the most significant obstacles to the use of technology in vocational education. The obstacles associated with technology application necessitate the presence of IT specialists in schools to handle these issues. It also implies that funding must be set aside in order to solve the latter. Challenges and advance The United Arab Emirates's overall IT infrastructure as well as that of The United Arab Emiratesian schools specifically. Due to obstacles pertaining to educational capacity, The United Arab Emirates's Ministry of Education needs to allocate additional cash in order to give schools the tools they need to be successful. Curricula creators must convene many meetings and have talks in order to address issues pertaining to the curricula and modify the VE courses. It also implies that in order to determine the actual efficacy of the present VE curricula, educators and learners must offer their opinions regarding the curricula. Furthermore, it was shown that these difficulties have a big impact on pupils' academic performance. From an educator's perspective, that was the conclusion. This implies that the The United Arab Emiratesian Ministry of Education needs to take the necessary steps. for making certain that these issues are dealt with.

The findings indicate that it is critical to address the obstacles preventing the application of technology in the VE industry. Overcoming these obstacles is critical to raising the caliber of VE and the results of VE institutions. From the perspective of instructors, the present analysis helps to identify the barriers that prevent the use of technology in VE. Similar investigations can be carried out by researchers focusing on other nations.

## 6. Recommendations

In light of its findings, the research suggests the following:

1- Improving the facilities in The United Arab Emirates and public schools to enable VE instructors to employ technology for instruction and training.

- 2- Educating instructors in vocational education on how to use technology to offer VE in schools in The United Arab Emirates.
- 3- Carrying out research on the obstacles that mobile technology adoption in the VE area faces.
- 4- Undertaking research on the obstacles to computer use in the VE area.

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