

The Challenges of Using Technology in Vocational Education and Their Impact on Students' Achievement from the Teachers' Point of View in Ramtha District Schools in Jordan

Haitham Mustafa Mahmud Eyadat^{1,*}

¹Al-Balqa Applied University / Al Huson University College, Jordan

*Correspondence: Al-Balqa Applied University / Al Huson University College, Jordan

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Abstract

The current article aimed to investigate the challenges of using technology in vocational education (VE). It investigated their effects on the achievement of students from the teachers' perspective in the schools in Ramtha. A sample consisting from (77) VE teachers in Ramtha, Jordan was chosen through the random method in sampling. This work used a survey. The survey that was used in this work consists of two main. The first part aims to collect personal data about the sample (i.e. gender and academic qualification). As for second part, it aims to collect data about the challenges of using technology in vocational education from the view of the sample. The researcher concluded that the severity of the challenges related to technology in teaching vocational education is moderate from the view of teachers. It was found that the most serious challenges related to the use of technology are represented mainly in the 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 the students' achievements from the view of VE teachers. The researcher of the present study recommends developing the infrastructure in public schools in order to enable vocational education teachers to use technology in the teaching and training processes.

Keywords: challenges, school students, technology, vocational education (VE), students' achievement, Jordan, Ramtha

1. Introduction

During the last couple of years, the world has been witnessing a major technological transformation. The educational process today requires using technologies, whether in classroom or at home (Al-Derbashi & Abed, 2017). That applies also to the vocational education (VE). The use of technology in education (including VE) contributes to attracting the attention of students in classroom. It contributes to improving the learning environment in classroom and lecture halls. It makes it easier for students and teachers to collect information (Pazilah et al., 2019). It has made it easier for teachers to communicate ideas and information and transfer experiences to students in a manner that is more effective than before.

Educational institutions are among the most important institutions in society. They are in need for using modern technologies to deliver education of high quality. Using modern technologies possess a great effect on the transformation and quality of education. It can motivate students to acquire more knowledge. It can be used for delivering knowledge with showing a higher levels of speed and accuracy. That shall contribute to raising the levels of students' achievement at educational institutions (Ahmed, 2019).

According to Al-Olayan (2019), the use of modern technologies is one of the features of the modern era. It's one of the concerns of the current generation. It is indispensable at workplaces at various types of organizations. It's indispensable in educational institutions. The educational field is deemed as the most important field in society. It's affected much by the emergence of modern technologies and technological revolution.

People today demand for the use of modern educational technologies in all the educational stages. Such demand has been increasing due to various factors. Such factors include: the failure of the traditional education system in

preparing students who have the ability to keep pace with the rapid developments. They include: the failure of the traditional education system in providing society with productive people (Saleh, 2010).

The extensive use of computer simulation technology, multimedia technology, virtual reality technology and distance education technology allowed students to overcome the temporal and spatial barriers. It also made students capable of managing their times and speeding up their learning process especially. The distance education shall offer wide access to knowledge sources all around the world (Li & Fu, 2014).

Vocational education aims at delivering education that prepares individuals to work as a technician or practice a skilled craft. It aims to develop people's talents. Such talents include: talents related to production, technology, management, service and etc. (Luo, 2011). According to Zaidan (2015), one of the problems of using technologies in the field of education is the poor skills in using them. Developing such skills required providing staff with training.

Ahmed (2019) adds that there are some obstacles facing the process of employing modern technology in the field of education. Such obstacles include: effective training opportunities for teachers to employ modern technology in education. They include: the resistance of some teachers to change their teaching methods and use modern teaching methods. They include: the high financial cost of some educational devices (especially the modern devices). They include: the lack of appropriate computerized software that fits with the nature of the used curricula. They include: the absence of an appropriate technological infrastructure in most schools. They include: having some teachers who aren't convinced with the value and benefits of using modern technology in the field of education on the long and short terms

Several issues related to secondary schools and educational technology field jointly are addressed today. Many of those issues are related to vocational education too. Such issues include: availability of software and equipment in vocational courses in secondary schools.

Education changes in an ongoing manner due to the ongoing technological developments. Technology innovations have been increasing rapidly. However, elements of the educational process (equipment, curriculum, and facilities) change in a slow manner. There isn't any economic imperative hindering the process of making rapid adjustments in education. However, such imperatives exist in the commercial sectors. Due to this differentiation, various issues emerged (Williams, 2015).

When appropriate workshop facilities are provided, students shall be capable to demonstrate and practice their skills. Multidisciplinary support has cons and pros from the perspective of planners. Virtual and real-world environments affect the students' learning process (Bano et al, 2022).

Koehler & Drummer (2018) add that conditions of school, vocational and ongoing learning have been changing worldwide. Teachers have been facing the challenges associated with the use of digital media extensively.

According to Banagiri et al. (2021), professional training includes mainly realistic classes through which one acquires experiences and knowledge which are related much to one's potential work. It allows students to get better job opportunities and makes them eligible for such opportunities. Five main challenges are presented below (Banagiri et al, 2021):

- Infrastructure: The appropriate infrastructure is essential for ensuring that the content is taught effectively. It's essential for ensuring that equality is provided in terms of educational opportunities.
- Administration: Adequate resources and support must be provided for enabling people to use technology.
- Learning: ICTs must be used for delivering education of better quality and promoting more awareness.
- Teaching: The instructors must be trained well in order to enable instructors to teach students through the use of information and communication technologies (ICTs)
- Content Creation: Content development is deemed time-consuming. It's also deemed expensive. The content enjoys a shelf life that's limited. VE is associated with a challenge that's deemed significant in terms of maintaining and developing content of quality that's high.

Other challenges associated with the use of technology for delivering VE may include the distraction of students' attention. They include: making it easier for students to commit acts of plagiarism. They include: hindering poor students' communication and speaking skills. They include: restricting students' thinking potentials. They include: hindering students from thinking about the way of solving problems, because students shall face solutions for numerous problems on the web (Pazilah et al., 2019).

These challenges affect the application of technology use in VE. They consequently affect students' achievements in

the primary classes in which the VE curriculum is implemented. It should be noted that VE teachers face numerous challenges in terms of using technology for delivering VE in classes. VE curricula requires having technologies, modern instruments and techniques that assists the teachers in giving lessons effectively, and skillfully. A question emerged about the importance of these technologies and their impact on student achievement. Many questions emerged about the challenges that reduce the application of technology in vocational education.

Therefore, the problem in this research lies in answering the question below:

What are the challenges of using technology in VE and their impact on students' achievement from the view of the teachers working in Ramtha, Jordan?

To be more specific, the objectives of this research articles lies in the following objectives:

- 1) The research article aimed to investigate the challenges of using technology in VE from teachers' view in Ramtha, Jordan
- 2) This research article aimed to investigate the impact of the aforementioned challenges on the students' achievement from the teachers' point of view in Ramtha, Jordan

To have those goals met, the two questions are answered in this work:

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 Ramtha, Jordan?

Question No. 2: Is there any significant difference between the respondents' attitudes towards the severity of the targeted challenges which can be attributed to their (gender, or academic qualification)?

This study is significant due to the significance of VE. VE contributes to increasing the number of the available job opportunities in the labor market. It's significant due to the significance of the technological transformation and the significance of employing technologies for delivering VE. It is significant due to the significance of addressing the challenges that face the use of technology in education. This study is significant due to the significance of measuring the severity of the challenges that hinder the use of technology in VE from the perspective of VE teachers.

This study is significant due to the significance of its results. Those results are important for decision-makers such as school principals in guiding vocational education teachers and helping them to overcome obstacles and challenges in the use of technology in education.

This work includes several key terms which are defined below:

Challenges of using technology: They refer to the things that hinder the process of meeting the goals intended from using information technology curriculum. Those challenges include: challenges related to technology applications, and challenges related to curricula, challenges related to students. They include challenges related to teacher, challenges related to the school capabilities, and challenges related to the school administration. They include challenges related to funding.

Vocational education: It refers to a process that's organized by institutions in order to provide the labor market with skilled workers (Ariyani et al., 2021).

The limits of this study are listed below:

- Spatial limits: This work targets the schools that are located in Ramtha District in Jordan.
- Temporal limits: The study was conducted during the year 2022.
- Human limits: This study targets VE teachers (the teachers of vocational education course).
- Limitations: The results in this article can't be generalized. That's because the results in this work are influenced by the sample size, and type. It's because the results are affected by the nature, type and items of the instrument. It's because the results are affected by the temporal and spatial limits

2. Review of Literature

There are many studies that have highlighted the significance of employing technology in vocational education and training and presented the challenges facing the application of technology in vocational education.

Bano et al. (2022) investigated the challenges associated with delivering technical and vocational education and training (TVET) in Pakistan. They adopted descriptive and exploratory approaches. They adopted a qualitative approach. Data was collected from five hundred (500) student and employees. Those employees include TVET

workers, teachers, and TVET job holders. It was found that TVET institutions currently face infrastructural problems and lack of funding. It was found that TVET in Pakistan is marked by inadequate skills. TVET in the latter country is marked by insufficient teacher training, high unemployment rate, lack of industry connectivity. It's marked by lack of female involvement.

Zeno et al (2022) explored the obstacles facing the use of technology in developing the professional performance of teachers in basic education schools. They aimed to identify the most significant problems and challenges that limit the use of technology in education from the teachers' point of view. To meet the study's goals, the researchers obtained data from a sample consisting from several basic education teachers. This sample consists from (100) male and female teachers. Data was collected through the use of a questionnaire. It was found that the teachers' preparation and their abilities to deal effectively with educational technology are essential factors affecting the success of integrating technology into the educational process. Training teachers on using technology is important. It was found that more attention must be provided to the professional development programs and plans for teachers. It was found that using technology in education is a social demand that must be met. Such use is an educational and professional demand. It was found that poor professional preparation of teachers is the most important barrier hindering the use of technology for delivering education

Banagiri et al. (2021) add that ICT revolution turned the intelligence into a commodity that's valuable. In the contemporary economy, the rate of economic growth is affected mainly by people's mental intelligence rather than being affected by their physical strength. The extent of achieving economic growth by people is affected mainly by the recruitment of knowledgeable employees. It's affected mainly by people's intention to continue learning. Hence, incorporating ICTs into VE and the educational system have numerous positive impacts on the teaching and learning processes. It was found that ICTs have a significant role in delivering VE of better quality. Hence, instructors must be mindful in the way of incorporating ICT into the educational process. It should be noted that such incorporation shall be associated with several problems.

Al-Maamari (2019) identified the attitudes of teachers and students towards using modern technological aids. He carried out the study in the high tech schools that are located in Sana'a and Nouakchott. He obtained data through conducting open-ended interviews with teachers, parents and students. It was concluded that the school community is influenced by the incorporation of modern teaching aids into the educational process in school. The teachers' perceptions vary. Some teachers were interested in the use of those aids. Other teachers were not interested in such use. It was found that the school community suffers from several obstacles. Such obstacles include the lack of the means and equipment that are needed needed to use modern technologies by teachers. They include: the poor abilities of some teachers in using ICTs due to the lack of training, motivation and administrative decisions

Ahmed (2019) explored the level of employing the technologies that are modern in teaching life sciences from the point of view of the teachers working in secondary schools in Zarqa (i.e. a city in Jordan). He used the descriptive analytical approach. A questionnaire was developed for measuring the level of employing such technologies for teaching such sciences. The sample consists from (88) secondary school teachers in Zarqa, Jordan. The researcher concluded that the level of employing such technologies for teaching such sciences is moderate. There isn't any significant difference between the respondents' attitudes which can be attributed to their gender or experience. There are significant differences between the respondents' attitudes which can be attributed to the type of school for the favor of the ones working in the private schools in Zarqa.

Al-Olayan (2019) shed a light on the use of modern technologies in the field of education. He explored the impact of such use on the quality of education. He also explored the pros and cons resulting from the use of modern technologies in the field education. Based on the results, it was found that one can change many educational aspects as a result of the use of information technology in the teaching and learning processes. It was found that using modern technologies in the field of education shall affect the future of the educational process.

Issa and Saleh (2019) explored the difficulties of using modern educational technologies from the perspective of faculty member. He explored whether there are differences between respondents' attitudes which can be attributed to scientific qualification, academic qualification, experience and specialization. The sample was chosen from the College of Basic Education / Al-Mustansiriya University. A questionnaire was used for collecting data from the targeted sample. The targeted sample consists of one hundred (100) teachers. It was found that there are some obstacles that hinder the use of educational technology by instructors in the process of teaching students. The most significant obstacle is represented in the lack of the needed equipment and infrastructure. Other obstacles include: the poor training courses given to teachers about the way of using educational technologies for delivering education

Zaidan (2015) explored the problems hindering the use of technology for the delivery of education from the

perspective of Arabic language teachers in the preparatory stage in Ramadi, Iraq. To have this objective met, a fifty three item survey was developed. Data was collected from eighty eight (88) teachers. It was found that the severity of the problems facing the use of technology in education is high from the perspective of Arabic language teachers in preparatory schools. The severity of the problems related to the teachers is moderate. The severity of the problems related to students is moderate.

Hamid (2014) explored the effect of using computer games in teaching science for second graders in Damascus, Syria. Data was obtained from (120) male and female students in the basic school stage. It was found that using educational computer games is more effective than using conventional teaching methods. . It was found that using educational computer games contributes to attracting students' attention due to the use of attractive images and visual and audio features.

Murad (2013) explored the extent to which teachers at the Directorate of Education in the Shoubak Brigade are capable of using ICT. He explored the degree of using ICT in the targeted subjects. He investigated the obstacles that hinder teachers from using them. A questionnaire was used to obtain data from the sample. The sample consists from (101) teachers. It was found that most of the respondents are capable of using ICTs. However, the extent of using ICT is low. The obstacles that hinder their use of ICT in teaching include the lack of the necessary equipment and infrastructure. Such obstacles include the poor training on the way of using ICT for teaching.

Shtawi (2013) investigated the obstacles that hinder teachers from using educational technologies in 11th grade in public schools in Nablus, Palestine. Governorate. In terms of the sample, it consists from (88) public school teachers in Nablus. It was found that the severity of the obstacles related to the academic content is high. The severity of the obstacles related to students is high. The severity of the obstacles related to the educational environment conditions is moderate. The severity of the obstacles related to teachers is low. It was found that there are differences between the respondents' attitudes which can be attributed to gender and the number of the training courses related to the field of technology.

There are differences and similarities between this study and the aforementioned studies. This study is similar to some of the aforementioned studies in terms of the instrument. Similar to this study, Ahmed (2019), Murad (2013) and Zeno et al (2022) used a questionnaire. Similar to this study, Ahmed (2019), Murad (2013) and Zeno et al (2022) used a descriptive analytical approach.

This study differs from the aforementioned studies in terms of topic. To be more specific, the present article aimed to investigate the challenges of using technology in vocational education (VE). It investigated their effects on the achievement of students from the teachers' perspective in the schools in Ramtha. This study differs from the aforementioned studies in terms of the spatial limits. To be specific, it was conducted in Ramtha.

3. Methodology

3.1 Approach

The research used the descriptive analytical method.

3.2 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.

3.3 Population

The population consists of all VE teachers who work in Jordan.

3.4 Sample

The sample includes seventy seven (77) teachers who were chosen randomly. Those teachers are VE teachers who were working in Ramtha, Jordan. Data about the targeted sample is shown below.

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

Variable	Category	Frequency	Percent(%)
Gender	Male	40	52.0
	Female	37	48.0
	Total	77	100.0
Academic qualification	Bachelor degree	62	81.0
	Diploma degree	15	19.0
	Total	77	100.0

3.5 Instrument

To explore the severity of the challenges of using technology in VE from the teachers and their impact on students' achievement from the teachers' view. The study tool which is the questionnaire was developed. The survey consists of two sections:

- The first section collects data on the demographic variables (gender and academic qualification).
- The second section collects data about the targeted challenges. Those challenges include: 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.

The degree of teachers' attitudes towards challenges of using technology in vocational education. Such attitudes were explored through the use of the five-point Likert scale. This scale has the following categories: (to a very large extent, to a large extent, to a moderate extent, to a low extent and to a very low extent). The latter categories stand for the following scores: (1, 2, 3, 4, and 5 scores) respectively.

3.6 Validity

In terms of the validity of the instrument, the researcher checked it through passing the instrument to three experts. Those experts were asked to assess the instrument in terms of language, clarity and relevance to the objectives of the study. They provided the researcher with their comments, opinions and suggestions. After that, several adjustments were made

3.7 Reliability

The values of the Cronbach alpha coefficient were calculated. They were calculated in order to measure the reliability of the questionnaire. The total value of the Cronbach alpha coefficient is (0.901). This value indicates that the reliability of the tool is high. That's because it's greater than 0.70 as added by Alderbashi, and Moussa (2022).

3.8 Statistical Analysis Methods

SPSS software was employed for having the data analyzed. It was used along with using several statistical methods. These methods are as follows:

- Frequencies and percentages: Those values were calculated in order to offer a clear description for the members of the sample. Such a description is connected to the demographic data
- Means and standard deviations: Those values were calculated in order to identify the respondents' answers to each paragraph. They enabled the researcher to identify the attitudes of the members of the sample.
- Cronbach's Alpha coefficient value: The researcher calculated this value to check and measure the reliability of the tool.
- Multiple variance analysis was conducted to determine whether there are differences between the respondents' attitudes which can be attributed to gender.

3.9 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

4. Results and Discussion

4.1 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 Ramtha, Jordan?

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

Number	Area (i.e. type of challenges)	Mean (M.)	Standard deviation (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

Based on Table (2), the results show that the severity of the challenges facing the use of technology in the VE field is moderate from the view of teachers. The researcher found that the degree of challenges of using technology in VE from teachers and their impact on students' achievement from the teachers' point of view in Ramtha District schools in Jordan is moderate, with the overall mean (3.44) with a standard deviation (0.86), which is moderate.

This means that vocational education teachers in public schools believe that there are obstacles and challenges which face the use of technological application in vocational education. Thus, it directly affects the students' achievements in schools.

The mean of the (challenges related to technology applications) is the highest (3.56). The standard deviation of the latter challenges is (0.88). The mean of the (challenges related to school administration) is the lowest (3.18). The standard deviation of those challenges is (0.87).

It was found from the results of the study that the order of challenges related to the use of technology in vocational education, which affected the achievements of students, was as follows: (1) Challenges of Technology Applications, (2) Challenges Related to school Capabilities, (3) Curricula Challenges, (4) Challenges Related to Teacher, (4) Challenges Related to Students, (5) Funding Challenges, (6) Challenges Related to School Administration.

The latter result can be attributed to the fact that there are several improvements made to the vocational public schools in Jordan in general and Ramtha in particular. Such improvements led to eliminating the obstacles facing VE in those schools. They include: providing labs with modern workshops.

These results are consistent with Ahmed (2019) who concluded that the degree of use of modern technology in teaching life sciences came to a medium and average degree. Bano et al (2022) found that the current state of the TVET institutions face infrastructural problems and lack of funding. Al-Maamari (2019) reported that school community suffers from several obstacles such as lack of equipment and modern technologies used by teachers. Issa and Saleh (2019) revealed that there are some obstacles that hinder the use of educational technology by faculty members in teaching.

The use of technology in the field of VE and overcoming the obstacles in this field in Jordan shall lead to achieving positive results. They shall lead to offering VE of better quality in Jordan. They shall lead to making achievements by teachers and students in vocational schools in Jordan

These results are consistent with Zeno et al (2022) who found that using educational technology effectively is one of the essential factors in developing the professional performance of teachers in education process. Banagiri et al (2021) reported that incorporating information and communication technologies (ICTs) into vocational and technical education and the educational system has numerous positive impacts related to the teaching and learning processes.

Al-Olayan (2019) reported that by use of information technology in teaching and learning we can change many educational aspects. Hamid (2014) reported that using educational computer games is superior to the usual methods of education.

4.2 Results and Discussion Related to Question No. 2

Question No. 2: Is there any significant difference between the respondents' attitudes towards the severity of the targeted challenges which can be attributed to their (gender, or academic qualification)?

To identify the significance of the differences in the degree of challenges of using technology in vocational education from teachers and their impact on students' achievement from the teachers' point of view attributed to (gender, or academic qualification), the averages and standard deviations were calculated as shown in the table (3).

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

Variable	Category	No	M	S.D
Gender	Male	40	3.47	0.86
	Female	37	3.39	0.91
Academic qualification	Bachelor	62	3.43	0.83
	Diploma	15	3.38	0.87

Based on table (3), it appears that there are differences between the means towards the level of the challenges of using technology in VE from teachers and their impact on students' achievement attributed to (gender, or academic qualification).

The results show that there are statistically significant differences between the means towards the severity of the challenges of using technology in vocational education from teachers and their impact on students' achievement for males and those with a bachelor's degree.

It is clear from these results that males are more aware of the challenges which hinder the use of technology in VE, and that teachers who hold a bachelor's degree are more aware of the challenges facing the application of technology in vocational education than their colleagues who have a diploma degree, according to the viewpoint of the study sample.

These results are consistent with Ahmed (2019) found that there's no statistically significant differences towards the degree of using modern technology in science education attribute to the gender and years of experience and there's a statistically significant differences from the teachers' point of view attribute to school. Shtawi (2013) found that there are statistically significant differences between the arithmetic averages of the obstacles facing IT teachers attribute to the gender variable and the variable number of training courses in the field of technology.

5. Conclusion

Based on the results, the severity of the challenges facing the use of technology in the VE field is moderate from the view of teachers. In order to reach positive results in the field of VE, people must overcome the barriers that hinder the use of technologies in this field.

The most serious challenges related to the use of technology in vocational education is represented in mainly in the ones related to technological applications, the ones related to the school capabilities, and the ones related to curricula. Facing challenges related to technological application means that there is a need for having experts in IT in schools to address such challenges. It also means that there's a need to dedicate funds to address the latter challenges and develop the IT infrastructure in Jordan in general and Jordanian schools in particular.

Facing challenges related to the school capabilities means that the Ministry of Education in Jordan must dedicate more funds to provide schools with the required capabilities. Facing challenges related to curricula means that curricular developers must hold several meetings and hold discussions to make changes to the VE curricula. It also means that teachers and students must provide their feedback about the VE curricula to identify the effectiveness of the current VE curricula in reality. In addition, it was found that these challenges significantly affect the achievement of students. That was concluded from the view of teachers. That means that procedures must be taken by the Jordanian Ministry of Education for ensuring that such challenges are addressed.

Based on the results, it is very important to overcome the challenges that hinder the use of technology in the field of VE. Overcoming such challenges is important to improve the outcomes of VE institutions and improve quality of VE.

The current work contributes to identifying the obstacles that hinder the use of technology in VE from the view of teachers. Researchers can conduct similar studies with targeting other countries.

6. Recommendations

Based on the findings of the study, the study recommends the following:

- Developing the infrastructure in public schools in Jordan to allow VE teachers to use technology in education and training.
- Training vocational education teachers on the use of technological software and means for delivering VE in Jordanian schools.
- Conducting a study about the barriers facing the use of mobile technologies in the field of VE.
- Conducting a study about the barriers facing the use of computers in the field of VE.

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