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## **Towards E-learning in TVET: Designing and developing an E-Competence Framework (E-CF) for TVET teachers in Palestine**

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### **Abstract**

This paper explores the Palestinian government's new plan and mechanism for integrating e-learning in TVET, particularly by equipping TVET teachers with e-learning competencies. It also examines and analyzes TVET teachers' current practices, attitudes and success stories in implementing e-learning since the COVID-19 pandemic. In doing so, this study defines (1) the e-learning knowledge, skills and competencies that TVET teachers already have and have been using since schools shut down because of COVID-19, as well as (2) the e-learning knowledge, skills and competencies that TVET teachers must still acquire to deliver quality e-learning programs. Furthermore, based on data obtained through interviews with 60 TVET teachers from 10 secondary vocational schools in Palestine, this paper proposes an E-Competence Framework (E-CF) and outlines eight key skills, competencies and attitudes that TVET teachers in Palestine require to deliver quality e-learning programs. The findings of these interviews indicate that most TVET teachers of technical subjects in Palestine have basic ICT knowledge and skills, while some also have advanced digital and e-learning competencies. Because teachers of technical subjects in TVET schools in Palestine tend to have bachelor's degrees in engineering, IT or computer maintenance but usually lack a TVET qualification, they need training on how to implement didactical or methodological concepts in e-learning in TVET, and not only training on how to use Microsoft Teams. Consequently, TVET authorities in Palestine must take into consideration the ICT competencies that TVET teachers already have, as well as the competencies that they must acquire to deliver quality e-learning, before designing and providing training. This requires a needs assessment and current situation analysis (Azimi & Rahmani 2013). E-learning in TVET initiatives in Palestine must also to some degree adapt lessons from international experience in e-learning and develop an E-CF tailored to national and local needs and constraints.

**Keywords:** *E-learning, E-Competence Framework (E-CF), Technical and Vocational Education and Training (TVET).*

## **1 Introduction**

The education sector in Palestine was one of the sectors most affected by the COVID-19 pandemic in March 2020. The closure of schools and the absence of thousands of students from their regular classes required a rapid transition to e-learning to maintain the continuity of education. Yet the challenges to implementing e-learning across the education system were numerous, including lack of a digital infrastructure for this unprecedented transformation and teachers' lack of knowledge, skills and competencies for advancing e-learning.

This situation forced the Ministry of Education and Higher Education (MoE&HE) to act quickly to put in place measures for gradually implementing e-learning across the education sector. The MoE&HE emphasized the need to: develop teachers' competencies for employing e-learning; spread the culture of e-learning in schools, homes and communities; orient curricula towards training students in the use of e-learning techniques; develop the country's Information and Communication Technology (ICT) infrastructure; build the necessary capabilities to employ e-learning in schools and homes; and urge relevant institutions to play their role in supporting e-learning and meeting its requirements.

Research has shown that use of ICT in education has positive benefits for teachers and students, because it creates an active teaching and learning environment (Ghavifekr & Rosdy 2015). However, many factors must be taken into consideration when integrating ICT in education (Cha, Park & Seo 2020). Developing countries in particular face many barriers to implementing e-learning, including technological and infrastructural limitations, lack of adequate ICT equipment and internet access, lack of funding, and in some cases also resistance to change (Babu & Reddy 2015; Ghavifekr & Rosdy 2015; Obwoye & Kwamboka 2016). E-learning in developing countries therefore needs to be carefully designed to account for and overcome these challenges (Raihan & Han 2013).

Use of e-learning to deliver quality education to students also requires teachers to possess training, knowledge, skills and competencies in ICT (Obwoye & Kwamboka 2016). As one study put it: "Competent teachers are key to successful e-learning implementation and they should have the appropriate skills and experience for effective implementation" (Gulbahar & Kalelioglu 2015). However, frameworks for developing teachers' ICT and e-learning competencies need to be adapted to local needs and teachers' qualifications levels, and the specific competencies that are required by teachers need to be defined (Fernandez-Sanz, Martínez, & Gómez-Pérez 2016).

In 2010, MoE&HE and the Ministry of Labour (MoL) jointly developed a TVET strategy for Palestine, which aims to develop TVET at all levels to promote organizational efficiency, human resource development and quality standards in teaching and learning. Palestine's Human Resources Development Strategy, which seeks "to develop, enhance, qualify and investigate the capacity building needs for all TVET manpower" (GIZ 2010), emphasizes the importance of integrating ICT in TVET to enhance TVET quality. Yet, the country's TVET sector continues to face many challenges, including teachers' lack of ICT skills and competencies, lack of an appropriate infrastructure, and the political conflict and Israeli occupation, which have consequences for education and educational policies, as well as for the social, cultural, and economic situation in Palestine (Samara 2018; Alijla 2019).

The aim of the research reported in this paper is to explore and analyze the Palestinian government's new plan and mechanism for integrating e-learning in TVET through equipping TVET teachers with e-learning knowledge, skills and competencies. The research also examines TVET teachers' practices, attitudes, and success stories in relation to e-learning. The focus of this study is on the e-learning competencies that TVET teachers already possess and

use, as well as the competencies that TVET teachers still must acquire to deliver quality education through e-learning.

This paper also proposes an E-Competence Framework (E-CF) for TVET teachers in Palestine. While the E-CF is based on data provided by teachers and instructors who teach Level 2 and 3 (skilled and craftsman) TVET programs to 11th and 12th grade students in secondary vocational schools, it may also be used as a reference for teachers and instructors who teach Level 1 (semiskilled) or Levels 4 and 5 (technician and expert) TVET programs, since certain key competencies apply to all TVET teachers and instructors at all levels (Samara, 2018). The proposed E-CF takes into account the specific needs of secondary vocational school teachers in Palestine based on their qualifications levels and competencies, teaching and learning objectives, curriculum objectives, and students' IT constraints.

The E-CF has been developed in the understanding that e-learning approaches in Palestine must to some extent reflect international experience regarding e-learning design, approaches, phases, areas and success factors. It therefore draws inspiration from two international frameworks that provide a common reference frame for national, regional and local initiatives: UNESCO's ICT competency framework for teachers; and the European digital competence framework, which defines six different areas in which educators' digital competencies may be expressed (UNESCO 2011; Caena & Redecker 2019; Redecker 2017). However, lessons from these frameworks are adapted to the culture, context and attributes of the Palestinian educational system (Khvilon & Patru 2002).

## **2 Background: MoE&HE's response to the COVID-19 pandemic**

In April 2020, MoE&HE launched its National Response Plan for COVID-19, which emphasized distance learning as a solution for ensuring the continuity of learning and outlined government procedures for implementing the plan. The Ministry also launched a series of online initiatives on social media and local TV channels to provide support to students. These initiatives used synchronous and asynchronous e-learning tools (Hrastinski 2008).

At the same time, some TVET teachers started using online platforms such as Zoom, Facebook, and WhatsApp groups to deliver synchronous e-learning, while other teachers began implementing asynchronous e-learning approaches, such as recording their lessons on YouTube and local television channels (Hrastinski 2008). These teachers' practices drew on their existing knowledge, skills and competencies in using digital platforms, tools and methods to deliver e-learning. However, as ICT competence levels and qualification levels vary from one teacher to another, these practices were not evenly applied across the TVET system. Furthermore, most students and their families were not sufficiently equipped with internet, electricity, and e-learning awareness.

Owing to the COVID-19 pandemic, all TVET stakeholders have been working together towards a common goal of embedding e-learning within the TVET system. The main TVET stakeholders and actors in Palestine are: the MoE&HE, the MoL, the Federation of Palestinian

Chamber of Commerce, Industry and Agriculture (FPCCIA), TVET and IT experts, donors, and implementing agencies. These TVET stakeholders have been discussing and debating new plans and mechanisms to expand the use of e-learning by equipping TVET teachers and instructors with e-learning knowledge, skills, competencies, attitudes, and values as the most important step in the transition towards equitable and efficient e-learning in TVET. TVET stakeholders have also emphasized that some TVET teachers already have advanced knowledge, skills competencies and attitudes and have shared success stories of the e-learning approaches that some teachers have been using to deliver TVET since the closure of schools due to COVID-19.

In September 2020, the MoE&HE organized a five-day training course called “Distance Learning Design Course”, which aimed to equip TVET teachers with e-learning capabilities. The training course introduced teachers to the main digital platform, the Microsoft Teams application in the Office 365 package, as a medium for virtually connecting all MoE&HE teachers, staff and students. Individual accounts were set up for each person to be able to access and use it for educational purposes. The MoE&HE’s Technology and Supervision Department was tasked with providing training on Microsoft Teams to TVET supervisors, who in turn were responsible for training Information Technology teachers in secondary vocational schools. Following their training, the IT teachers provided training to the rest of their schools' teachers of other technical subjects.

### **3 Research focus and methodology**

#### **The main question of this research is:**

How well has training for e-learning in the TVET system in Palestine been designed and implemented in practice, especially in relation to building teachers' e-learning competencies?

#### **The sub-question(s) are:**

1. What is your feedback on the “Distance Learning Design Course” that the MoE&HE provided for teachers?
2. As a TVET teacher teaching a technical subject in a secondary vocational school, and from your personal practical experience of using e-learning to deliver training since COVID-19, what are the competencies, skills and attitudes you have drawn upon or feel you must still acquire to deliver quality e-learning education?

Qualitative methods (in-depth and expert interviews) were used to collect and analyze data from 35 IT experts, TVET experts and key informants from the MoE&HE, the MoL, and the Federation of Palestinian Chamber of Commerce, Industry and Agriculture (FPCCIA) with regard to the first sub-question. 60 TVET teachers from 10 vocational secondary schools in Palestine were interviewed to obtain their views on the second sub-question. The interviewed teachers teach Level 2 and 3 (skilled and craftsman) TVET programs to 11<sup>th</sup> and 12<sup>th</sup> grade

students. Both sets of interviews took place between March and September 2020. The E-CF was developed based on a content analysis of the interview results.

## 4 Research results

Responses given at an early stage of the interviews highlighted the need for an e-learning framework and concrete plan to build TVET teachers' e-learning competencies. All 35 IT experts, TVET experts and key informants interviewed for this research emphasized the importance of developing TVET teachers' competencies and establishing an E-CF.

A Deputy Minister in the MoE&HE declared:

*“There is an urgent necessity to develop teachers’ competencies to use e-learning because events in the near future will force everyone to employ it.*

According to an IT expert who was interviewed:

*“The first aspect that leads to the success of e-learning in the TVET sector is to set competencies and develop an E-CF for TVET teachers.”*

An educational technology researcher and Director General of Vocational Training at the MoL said:

*“Training outcomes depend on the teacher and the competencies that a teacher has. We must establish a set of competencies for teachers to improve the quality of e-learning in TVET. “*

The IT and TVET experts and key informants also emphasized the importance of considering and adapting to some degree international experiences in using e-learning in TVET, in particular the factors that have led to the success of e-learning initiatives. However, some IT and TVET experts noted the importance of tailoring lessons from international experience in e-learning to the needs of TVET teachers in Palestine, taking into account TVET teachers' qualifications and competencies, as well as the infrastructural, technical and financial constraints of the TVET system in Palestine.

Giving their feedback on the “Distance Learning Design Course” provided by the MoE&HE, all of the teachers interviewed mentioned that the training had many pitfalls: 1) the course was very theoretical, and teachers were not given a chance to implement tasks or to design learning modules; 2) the training was provided without carrying out an ICT competence needs assessment, which meant that the MoE&HE failed to take into consideration individual differences between teachers in terms of their e-learning and digital skills and competencies; and 3) the course focused primarily on how to use Microsoft Teams and not enough on the implementation of didactical or methodological concepts in e-learning in TVET. Yet, as previous studies have noted, to develop teachers' e-learning competencies, teachers require more than simply knowing how to use devices and applications (Falloon 2020). As one study concluded: “Knowing how to use the tools is only the foundation” (Ertmer & Ottenbreit-Leftwich 2010).

Many of the teachers interviewed (10 IT, 12 computer maintenance and 30 engineering teachers) stated that the course did not meet their needs. As one respondent put it:

*“We did not require the training course that was provided for us by the MoE. As IT and computer maintenance teachers, we were not asked about our training needs. We already have a certain level of skills and competencies in using Microsoft Teams and have basic ICT skills. We expected and need advanced training, knowledge, theories and approaches in using e-learning for TVET.”*

It is worth noting that TVET teachers in Palestine tend to have bachelor's degrees in academic subjects – mainly engineering – but usually lack a TVET qualification. Furthermore, all of the teachers interviewed for this study taught technical subjects and were engineering, IT and computer science or computer maintenance graduates. Accordingly, they all had basic ICT skills and knowledge and required advanced training in advanced ICT competencies, not just training on how to use Microsoft Teams.

The interview results indicate that a thorough needs assessment and current situation analysis is required before any kind of training is provided, to identify gaps in teachers' digital and e-learning competencies as well as their training needs (Azimi & Rahmani 2013). Such a needs assessment helps to “address the knowledge gap related to the digital technology in education by pointing out both the problematic areas and the promising approaches to be adapted in the efforts to harness advantages of digital technology in education processes” (Kalolo 2019).

The needs assessment should focus on identifying:

1. The e-learning competencies that TVET teachers already have (Caena & Redecker 2019);
2. The level of the ICT/digital competencies that TVET teachers already have (Caena & Redecker 2019);
3. The e-learning and digital competencies that teachers must acquire to improve the quality of training that they deliver; and then
4. The specific areas in which training is required.

Accordingly, a debate is needed among all TVET stakeholders in Palestine to determine the current situation of TVET teachers: their qualifications, capacities and competency levels and training needs, taking into consideration lessons learned from international experience. These assessments and analyses should form the basis for designing e-learning initiatives and establishing an E-CF for TVET teachers.

International experience in designing e-learning programs suggests that training programs for TVET teachers in Palestine must start at the next step after digital literacy, which is knowledge deepening (UNESCO 2011). Such an approach can transform teachers from having basic knowledge of e-learning approaches to being able to apply that knowledge to use digital technology to solve complex problems, to move from basic ICT tools to more complex tools, and to transform their standard classroom into collaborative groups which they manage and

guide online. Furthermore, “[t]eaching with technology requires teachers to expand their knowledge of pedagogical practices across multiple aspects of the planning, implementation, and evaluation processes” (Ertmer & Ottenbreit-Leftwich 2010).

However, such a transformation will require designing training programs that build teachers’ capacities along the following dimensions: (a) e-learning content knowledge; (b) pedagogical knowledge of online instructional practices, strategies, methods, or approaches; and (c) novel or altered instructional resources, technology, or materials. It also requires changing teachers’ beliefs, attitudes and pedagogical ideologies in relation to e-learning approaches.

## 5 Proposed E-Competence Framework (E-CF)

The E-CF presented in this section is based on the feedback received during the interviews with secondary vocational school teachers. The usefulness of developing an ICT/digital competency framework has already been recognized in academic studies: “A competency framework helps to recognize individual contributions, skills, and knowledge” (Eichhorn 2018). The E-CF presented in this paper was developed to reflect the knowledge, skills and competency needs of Palestinian TVET teachers in line with their qualifications, needs, culture, and students’ learning requirements. The competencies included in the E-CF have emerged from responses received to the research sub-question: “As a TVET teacher teaching a technical subject in a secondary vocational school, and from your personal practical experience of using e-learning to deliver training since COVID-19, what are the competencies, skills and attitudes you have drawn upon or feel you must acquire to deliver quality e-learning education?”

The interview results indicate that the skills, competencies and attitudes that TVET teachers in Palestine require for delivering quality e-learning include:

**1. A positive attitude towards e-learning.** Teachers should believe in the positive impacts that e-learning can have on our personal and professional life, as well as the opportunities and strengths offered by e-learning (Philomina & Amutha 2016). They should also have a positive attitude towards change and a willingness to use new tools and technologies to adapt to new situations. A positive attitude towards e-learning can also build teachers’ confidence, readiness, positive expectations, and ability to think and be creative.

As one participant stated during an interview with 8 IT and 13 computer maintenance teachers:

*“As an IT and computer maintenance teacher, we think students will be enthusiastic to engage in e-learning through online lessons during COVID-19 and the shutdown of schools, because I expect it to be more interesting than traditional education.”*

The above quote highlights the importance of teachers having a positive attitude towards e-learning, which is necessary for teachers to proceed to the next step and inspire students to accept change. A positive attitude also helps teachers to accept change, create change and take responsibility when dealing with uncertainty. Taking a challenge and taking responsibility

increases one's ability to embrace e-learning. The greater the belief among teachers of the benefits of e-learning, the greater the chances that they will use it.

The link between a positive e-learning attitude and the adoption of e-learning practices is illustrated by one teacher's statement during an interview with 5 teachers specializing in computer maintenance:

*“When the schools shut down in March, we didn't stop teaching; we immediately started our YouTube channel and started uploading a lecture daily after recording it. We were able to finish all the theoretical curriculum and part of the practical skills curriculum. From this experience, I have learned new e-learning competencies and skills.”*

The IT and computer maintenance teachers interviewed showed a readiness to engage in e-learning, which was aided by their ICT and digital knowledge, skills and competencies. They also showed confidence by taking up the challenge, a readiness to accept change, and a willingness to search for opportunities and learn new skills to adapt their teaching practices to an online environment.

**2. Creativity in using digital tools.** Teachers need to be made aware of the many tools and applications for e-learning available via mobile phones and laptops, which can be used to perform educational tasks and deliver theoretical and practical skills training. Creativity is also necessary for finding new ways of teaching subjects, such as games, videos, and interactive tools. Digital tools and innovative teaching approaches can make lessons more interesting and create an enthusiasm for e-learning. Creativity is also needed for teachers to make the best use of whatever tools are available to students. This is an important skill, since most students in Palestine lack access to laptops and reliable home internet.

A hospitality teacher interviewed shared a creative practice:

*“I taught a lesson on how to prepare breakfast at home. I asked students to record a video on their mobiles and send it to me. I asked them to use the available tools and real breakfast environment in their home to become acquainted with how they can apply their knowledge and skills in a real-life situation.”*

Other creative approaches shared during the interviews included: (1) using schools' main web pages to post student videos and creative ideas, with a competition for the best video; and (2) creating a learning channel for students on YouTube, where they can share their work online. Both of these ideas are creative ways to inspire students, encourage them to create and share their content and ideas, and promote online student interactions.

A teacher of computer maintenance highlighted the benefits of e-learning thus:

*“I recorded lessons and created my channel. For now, I have more than 100 lessons on it as a reference for students at any time and any place. This has created more interaction with my students and has made all the content of the curriculum available online all the time.”*

The above quotation demonstrates that teachers' positive attitudes and practices are the most important elements that determine the success of e-learning initiatives. Inspired by this teacher, many other secondary vocational school teachers began to create their own YouTube channels and to upload their online lessons to make them available to students on a flexible basis. Furthermore, students from other schools, where e-learning activities may not have been taking place, were also able to benefit from the availability of these online lessons.

**3. Communication skills.** Strong communication skills are necessary for teachers to be able to assess students' competency levels, manage student behavior, keep students engaged, and encourage and motivate students during online lessons. Teachers also need good communication skills to interact with students and discover students' skills, talents and creative ideas.

**4. Preparation skills.** Teachers need to know how to prepare students before online lessons. For example, sending learning materials or assigning small tasks for students to do before lessons creates a conducive environment for online interaction and gives enough time for students to 'warm up' to course topics, which in turn can increase their participation during lessons. It also reminds students to be on time for lessons. Good online teaching preparation involves not only sharing documents, but also providing feedback, answering questions and devising methods for controlling student behavior during lessons.

**5. Facilitation skills.** The ability to manage classes and student learning online is a vital skill that goes beyond just understanding how to use digital tools to, for example, divide students into groups. Understanding how to manage class interactions and foster skills, such as teamwork and collaboration, during online lessons are skills for which many teachers will require special training and support.

**6. Leadership skills.** The ability to "empower learners" by making them feel included and providing them with a sense of ownership of the learning process is another important skill (Redecker 2017). Training in leadership skills should improve teachers' ability to motivate students and their families through, for example, acquiring and demonstrating an understanding of students' needs, levels and constraints. All of the teachers interviewed emphasized their need for training in advanced leadership skills to motivate students and their parents to accept e-learning as a vital part of their education. As one respondent commented:

*"The idea of resisting change is one of the challenges that we have been facing with students and their parents since we started using e-learning. We need advanced leadership skill to use to motivate students"*

**7. Time management skills.** Teachers need to manage lessons and convey learning content in a limited time period. In lessons lasting 45 minutes, teachers are expected to demonstrate both the methodology and learning tools, which requires planning. Time management skills are also necessary for teachers to prepare for online sessions before they start, to make sure students arrive on time and lessons begin on time.

**8. Assessment.** Teachers must use online tools and methodologies for assessing, grading and providing feedback to students, within the constraints of the ICT tools and instruments that are available. Learning how to do this effectively online requires training and practice. An engineering teacher interviewed for this study suggested one approach for evaluating student learning:

*“We give students a task of a module within their curriculum and ask them to find mistakes. This helps us to know if students understand the education module or not and also this helps us to grade students and provide feedback.”*

Creative approaches are required to overcome obstacles to online assessment, such as the problem mentioned by all of the teachers interviewed regarding parents unhelpfully answering questions or performing tasks for their children, with negative consequences for student learning. One solution to this issue was provided by a teacher during an interview with five engineering teachers:

*“I ask students to perform a task while recording a short video using their voice, to make sure that the students themselves are performing the task and the homework.”*

In both cases, teachers used a simple task, technique and tool to check that students were doing their work themselves and were learning the material being taught.

Online tools and methodologies can be time-saving measures for teachers, once new skills are acquired and their investment in e-learning begins to pay off. As one teacher remarked during an interview with 13 teachers of different technical subjects:

*“Grading and assessment takes a long time for us as teachers. We need to learn a new methodology for grading and assessment that helps us to save time and give more time to the lesson.”*

All of the teachers interviewed emphasized that they need training in advanced tools and creative methodologies for conducting assessments and grading homework, which keeps students engaged and saves time for teachers to do other tasks with students.

The eight competencies listed above, which are the key competencies that TVET teachers in Palestine require to deliver quality e-learning programs, complement each other and cannot be divided. Furthermore, TVET teachers need these skills at all stages of the teaching and learning process, from the initial planning stage to the implementation and evaluation stage. The findings of the interviews indicate that teachers of technical subjects in secondary vocational schools in Palestine have some mastery of these eight competencies, but that the level of mastery varies from one teacher to another. Most TVET teachers in Palestine have these competencies at a basic level and require training and support to acquire an advanced level. This training needs to be tailored to teachers according to their level and also needs to be adapted to each stage of a teacher’s role. For example, the training needed for planning online lessons is different from that needed for implementing and evaluating e-learning.

The proposed E-CF competencies that are mentioned in this paper come under the six professional activities for educators outlined in the European Digital Competence Framework for Educators – that is, professional engagement, digital resources, teaching and learning, assessment, empowering learners, and facilitating learners’ digital competencies (Redecker 2017). However, teachers of secondary vocational schools in Palestine require training in these competencies at a level that meets their requirements for addressing the objectives of the subject they teach according to their curriculum objectives.

## **6 Conclusion and outlook**

Introducing e-learning in TVET in Palestine as a new tool for teaching requires fundamental changes in the learning elements, namely: the environment, the trainers, the trainees, and the content. E-learning in TVET in Palestine became a necessity after the closure of schools because of COVID-19. The government, the MoE, the MoL, TVET experts, and other stakeholders have been working together to design and implement e-learning in education. However, e-learning in Palestine is facing many challenges, including an unmet need for advanced ICT competencies and skills, which TVET teachers require to prepare, plan, arrange and deliver curriculum and to conduct assessments using online tools and methodologies.

To empower TVET teachers and equip them with e-learning competencies, the MoE&HE provided a one-week training program for TVET teachers on how to use Microsoft Teams as the main educational platform. However, 60 secondary vocational school teachers that were interviewed asserted that the training failed to satisfy their needs, because all teachers of technical subjects in secondary vocational schools in Palestine are engineers, computer maintenance and IT graduates. So they have the basic skills and awareness about ICT, but require training on the advanced phase that comes after the technology literacy phase, which is knowledge deepening (UNESCO 2011). Teachers also require training that focuses on the implementation of didactical or methodological concepts in e-learning.

From this research, an E-CF was developed based on the skills, competencies and attitudes that TVET teachers have or must acquire for efficient e-learning and quality education output. The E-CF also took into consideration interviewees’ individual teaching practices during lockdown. Furthermore, there is a necessity to adapt international experience in the design of and success factors in using e-learning in TVET, which must take into account TVET capacity limitations, local needs, teachers’ qualifications and the level of ICT integration in education in Palestine.

The proposed framework is based on a limited set of data but could form the basis of a new and more comprehensive E-CF for the TVET system in Palestine. The framework should inspire debate amongst all TVET stakeholders about how to conduct a needs assessment for teachers. Debate is also needed to create an E-CF that includes all of the skills that TVET teachers require to provide e-learning and related training.

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