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Digital Competence of VET Teachers: Illustrations from Non-Technological Professions

Lizandra, Jorge*

University of Valencia, Spain, jorge.lizandra@uv.es

Ros, Alicia

University of Valencia, Spain, alicia.ros@uv.es

Suárez, Cristóbal

University of Valencia, Spain, cristobal.suarez@uv.es

Marhuenda, Fernando

University of Valencia, Spain, fernando.marhuenda@uv.es

Abstract

Within the TackleVET Erasmus+ KA2 project, in this paper we provide illustrations of the survey we conducted in Spain and the UK. We describe the methodology we have used, the conditions in which we conducted the interviews and the framework we used to analyse them. Given the exploratory and qualitative nature of our survey, we focus upon the extremes among the cases we have researched and we also point to commonalities and trends we have identified. We conclude by giving some hints about possibilities for motivation and fostering staff development in the domain of digital competence, while in the paper we focus upon the self-perception of teachers about their teaching abilities and the use they make of digital resources.

Keywords

interviews; self-perception; teaching competencies and digital competencies.

1 Introduction

Within the TackleVET proposal, we have conducted interviews with VET teachers in four countries so far: Portugal, the UK, Germany and Spain.

In this paper, we will provide results and commentaries on the work conducted in the UK and Spain, as results on Germany are presented in the other paper within this ECER symposium and results from Portugal are still being handled in a way to make them comparable with the rest.

* Corresponding author

The paper concerns the following research questions:

1. What are the digital competencies VET teachers perceive they have and they lack?
2. What is the role of digital competencies VET teachers perceive as needed in their professional activity?
3. What is the relation of the digital competencies VET teachers use in their classes and that demanded by the professional sectors in which they work?
4. In order to answer these questions, we will use examples from our interviews with VET teachers, using some excerpts and referring to the DigCompEdu framework of reference.

2 Theoretical framework

In 2017 the DigComEdu was proposed for the Joint Research Center of the European Union (Redecker, 2017). The objective of the DigCompEdu framework proposed “is to reflect on existing instruments for educators’ digital competence and to synthesize these into a coherent model that would allow educators at all levels of education to comprehensively assess and develop their pedagogical digital competence” (Redecker, 2017, p. 13). We find the DigCompEdu model valid to raise the analysis tools and pedagogical proposals for the development of the teaching tasks and duties in the VET sector.

Under the DigCompEdu framework, the conception of TTDC is determined by 22 specific competences organized in 6 areas (Table 1). There are also six levels of development of this competence: the first two are basic, Newcomer (A1) and Explorer (A2), the following two are intermediate, Integrator (B1) and Expert (B2) and the last two are assumed as high level of competence development, Leader (C1) and Pioneer (C2).

Table 1 The six DigCompEdu areas (Redecker, 2017)

European Framework for the Digital Competence of Educators	
Area 1	Professional Engagement: Using digital technologies for communication, collaboration and professional development.
Area 2	Digital Resources: Sourcing, creating and sharing digital resources.
Area 3	Teaching and Learning: Managing and orchestrating the use of digital technologies in teaching and learning.
Area 4	Assessment: Using digital technologies and strategies to enhance assessment.
Area 5	Empowering Learners: Using digital technologies to enhance inclusion, personalisation and learners’ active engagement.
Area 6	Facilitating Learners’ Digital Competence: Enabling learners to creatively and responsibly use digital technologies for information, communication, content creation, wellbeing and problem-solving.

We take as a starting point a part of this model to develop it in the VET area. However, it is not a thorough and mechanical application of the model, but a pedagogical development on digital teaching competence in a specific field of professional teacher development. Therefore, we find it necessary to point out some considerations about application we have made of this model for our purpose:

- To consider digital competence as an aspect of the teaching role that is not specifically constrained to a technical skill. This is visible by analysing the 6 areas in which these competencies are organized.

- Beyond an adaptation of the digital competence of the overall citizen, given that the digital competence is not equivalent to the Digital Teaching Competence, this model suggests a set of own dimensions for this professional profile.
- In this effort to define the professional features, this model clearly integrates the pedagogical variable as an unequivocal feature of the Digital Teaching Competence. This aspect can be appreciated in areas 2, 3, 4 and 5.
- The model offers a complete framework including areas and levels, able to guide in a consistent way both the study and the development of digital competence.
- Since there is the possibility of replicating this framework in different educational scenarios as in various countries of the European Union, the possibility of unifying the analysis language is broadened by assuming it as a common framework.
- At an operational level, it is also valid for research, since this model comes to offer a series of specific indicators that allow those interested to evaluate this competence, as well as to validate and improve it.

In our research we have tried to cover all six areas through our interviews with teachers in different VET occupational domains, even though the cornerstone for your analysis in order to improve VET teachers' digital competence is focused upon the relation between the pedagogical approach, the digital resource and assessment, a rather concrete, indivisible, articulated and significative core.

Given that learning aims and contents in VET practice are a varied, specialized and heterogeneous palette, that cannot be limited to the nature of disciplines, the educational dimensions we can identify as appropriate for a significative view of the competent use of technology are the how (pedagogy), the what (resources) and the value attached to learning (assessment).

Pedagogy, resources and assessment are at least three of the elements that interrelate to each other. From an educational perspective, they can be analyzed separately, but the three of them form a unity of basic representation that is needed in order to understand the use of technology not just as a step or technical activity, but as a wider strategy.

Due to this, instead of offering VET teachers a pedagogical solution on the one side, a list of resources on another one and a vision of assessment as separate to the previous two, we attempt to integrate all three in a holistic view.

Therefore, both the analysis of the interviews to VET teachers as well as the suggestions to improve VET teachers' digital competence will be introduced as a unity able to provide more than just a simple technical recommendation. All three aspects, considered as a unity, are key to understand the change that teachers' digital competence is able to produce in VET.

It is well known that teaching practice aim and content are key dimensions, although neither in VET nor in other educational levels they are enough to guarantee a significative educational experience. To the content that every VET teacher determines according to the combination of the planned curriculum and his/her professional experience, we must add the opportunity to think of technology as articulated to a pedagogical view that conditions the use of resources and defines an understanding of assessment. Pedagogy is here the guiding principle of the use of resources and assessment.

3 Method and sample

Based upon the literature survey we have conducted (Lizandra, Suárez, Ros, & Marhuenda, 2019), we have devised an interview guideline that was discussed and agreed in the TackleVET partnership and that we piloted in early 2019.

Our interviews were conducted between February and May 2019. 11 interviews in the region of Valencia, Spain, have been used for this report; and three interviews in Wales, UK,

as well. The 3 Wales and 6 of the Spanish ones are in the professional field of personal and social care (social care, child work), while 3 are in the domain of physical activity and 2 in the domain of FOL¹.

Interviews lasted between half an hour and one hour and a half, depending on the detail that teachers wanted to go into. Most of them were recorded. Some of them happened in the VET schools while others took place in other locations and off working hours.

We used a common template to gather information on the interviews and to portray the most relevant dimensions addressed. The template was agreed at a project meeting in Valencia in early April 2019 and it focused upon three dimensions of the DigCompEdu.

Portuguese interviews have been handled in a quantitative way, and these results are also summarized in the paper, even though they have not been portrayed using the agreed template.

The features of the interviewed people are the following:

Table 2 Description of the people interviewed

	Sex	Age	Occupational field	Teaching experience	Self-perception
Spain1	Male	>50	Social care	>30	Advanced
Spain2	Female	>40	Child education	>7	Beginner-Intermediate
Spain3	Male	>50	FOL	>19	Intermediate
Spain4	Male	<30	Social care	>3	Beginner
Spain5	Male	>40	Social care	>12	Mixed
Spain6	Male	>50	Physical activity	>28	-
Spain7	Male	>30	Physical activity	>8	-
Spain8	Male	>50	Social care	>25	-
Spain9	Female	>30	Child education	>7	-
Spain10	Male	>40	Physical activity	>18	-
Spain11	Male	>40	FOL	>10	-
UK1	Female	>40	Early childcare	>20	Beginner-Intermediate
UK2	Female	>40	Social care	>18	Intermediate
UK3	Female	>40	Social care	20	Intermediate-advanced

The Portuguese sample included 13 teachers, 10 of them worked in the child care sector, all of them older than 35 (and three of them older than 50), 10 of them female and all with more than 10 years teaching experience.

4 Results

We present our results organized around the three dimensions we have stressed in the theoretical framework: pedagogy, resources and assessment.

It is relevant to point to the fact that, in contrast to the German sample, presented in the third paper in this symposium, the teachers we have dealt with in the UK, Spain and Portugal do work in occupational areas in which the implementation of technologies is low, as they are not productive areas but rather service provision to people and, therefore, most of the work still

¹ FOL stands for ‘Formación y Orientación Laboral’, a compulsory subject in all formal VET qualifications which content consists in health and safety issues, labour relations and its legal arrangements and search for employment (see Marhuenda, 2018).

happens at an analogical rather than a digital level. Technologies play therefore an instrumental role rather than being part of the core of the work developed.

4.1 Pedagogy

Pedagogy consists of the notions on teaching and learning a teacher has and that therefore provide a nest of conditions to foster, stimulate and define learning activities relying upon the use of technologies. Technology relies upon pedagogy to be able to have an educational impact (Suárez-Guerrero, Lloret-Catalá, & Mengual, 2016).

Educational innovation comes through a pedagogical approach (Gros, 2016) and implies an articulation of disciplinary knowledge and technological knowledge within a pedagogical knowledge (Mishra & Koehler, 2006). The pedagogical decisions the teacher has to take are to do with the educational vision and have an impact upon resources and assessment. In a way, pedagogical innovation does not rely upon technology but precedes it, in such a way that we may speak about four broad dimensions (Figure 1): teaching with ICT, individual learning, collaborative learning and students' self learning.

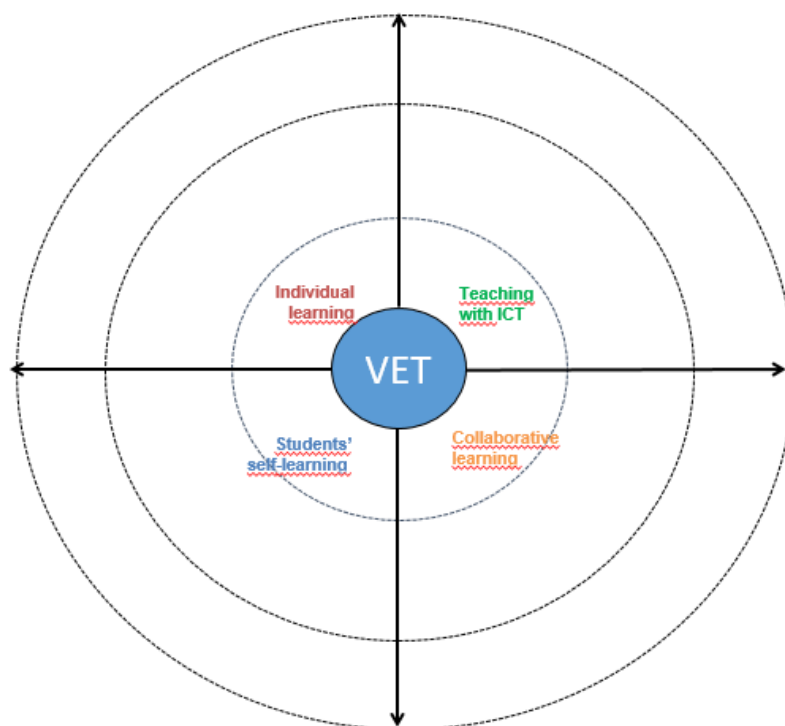


Figure 1 Four main domains of digital competence in VET (Lizandra et al., 2019)

These four possibilities imply, foster and hinder any teaching proposal in the classroom and will have an effect upon the resources chosen and the assessment conducted. Let us see what results we have found in our interviews. In most of them, particularly with the most experienced teachers, we have found that technology is embedded in their teaching practice in a way that digital competence, no matter to what extension has been developed, is a part of the wider teaching competence.

They do so by instructing students in selection of relevant information available online, encouraging active participation of students which in the occupations studied is also part of the

vocational profile; assisting in the selection of content (therefore searching for accuracy, relevance, ethics and appropriateness) and, in certain ways, bringing a non-digital approach to digital media, addressing issues such as authorship acknowledgment; or the combination of audiovisual media with written text, hence considering reading as a key competence no matter what. It is customary to bring to the classroom the technologies and tools used in professional practice and collaborative learning is enhanced as it is inherent to the vocational field in social and child care.

«As case UK1 holds, the students love my facebook pages since the materials I provide ...They actively use it as an extension of the classroom. The lower level students seek assessment guidance actively through yammer because they can get an immediate response from myself which allows them to make informed decisions regarding their own learning needs and helps them submit their tasks on time. Some students lack confidence in asking face to face for help but the tool of yammer means they can do this remotely»

4.2 Resources

There is a huge array of digital resources available to VET teachers, and this is both varied and changing. There are some prospective essays listing these regularly (Becker et al., 2017), ranging from smartboards to social networks, open resources or databases, smartphones or augmented reality, blogs, wikis and so on. Of course, the technologies employed in the companies in the professional sector can also be used as teaching and learning resources. Open Educational Resources, as defined by Butcher (2015) are also part of these, and they may lead to a wider understanding of education (Ricaurte, 2016).

VET teachers in the field of physical activity hold that Internet and social networks can be very useful; and they also make frequent use of the mobile phone even if students have very limited search capacity, so teachers try to help them to have better competence and autonomy. Selection of appropriate and accurate content is the main problem they face. Youtube tutorials, professional websites and podcasts are also used. In some cases, digital resources are fully embedded in a digital pedagogy, like is the case of Spain7:

«All the contents are structured in OneNote and the Microsoft Teams applications...We use the “Miniprofes360” for learning anatomy... They create all the contents, respecting the original authorship... We use personalised learning or Flipped classroom. Students have access to the net whenever and wherever. Then we provide online lessons through skype ... Students can contact at any time with teachers and classmates. The chat gives us higher possibilities for feedback ... Students create contents collaborating each other Moreover, they use traditional office tools in a collaborative way.»

However, in the area of resources we have also found teachers reluctant to their use. Again, we refer to case UK1:

«I am a bit of a techno phobe and need lots of support with new technologies and I do lack confidence in trying new resources in case they go wrong. I rely on technical support from staff to support me and I shy away from volunteering to trial new technologies that the college may introduce... It is also more appropriate for this generation to work with technology since at schools they are already learning about ICT and digital communication as part of the secondary curriculum... The creativity of lessons that technology can bring is very important especially since tutors are having to differentiate widely in their delivery more so these days with the rise of learners who have dyslexia and other learning needs. Simplicity though is important for me because If something goes wrong with the digital technology then my lesson will be ruined due to my insufficient expertise.»

4.3 Assessment

Assessment with the support of digital technologies may be a different assessment to traditional one or it may also consist of the traditional assessment stressed through the use of technological resources; hence facing the same dilemmas of learning assessment (Crisp, 2011). We can consider which (technological) tool we may use to assess students' learning, or rather take into account that technologies may be used to assess for the sake of learning instead of just to check how far it has gone, keeping in mind that digital tools can ease the automatization and management of information that is part of assessment (Benson & Brack, 2010).

Furthermore, digital competencies allow us to think of new assessment domains or objects, such as online communicative skills, management of uncertainties in the learning processes due to amount of information at hand of the student, or the online chances to increase cooperation in learning activities (Williams, 2017). It will therefore be relevant to check whether assessment is part of the digital pedagogical model of the teacher, whether it is product or process oriented and whether it makes use of digital tools to handle evaluation.

Here is how Spain1, an expert in the incorporation of digital tools to teaching processes, well acknowledged in the region and him being the most experienced teacher in our sample, deals with assessment: «No on-line assessment, though I am able to do I do not want to... The blog produced by students in groups of 4 is used to assess students learning; prior to that I myself write a blog so the students can have it as a reference... Formative assessment is often used, for finding out previous knowledge of students, also their ideas and expectations, and also used for follow-up, but not for final assessment. However, moodle is the platform where students have to upload their products to be assessed, but I use it as a repository, not an evaluation tool. Nevertheless, transversal skills can be taught and assessed thanks to technologies, where more than one skill is behind almost every task.»

A different view is held by case UK3, also an experienced teacher and with expert use of digital tools:

«Technologies are used for both continuous and final assessment of students, as well as to explore previous knowledge they may have. Referring to these tools allows me to gain information from activities performed by students, to adapt planning of the teaching and learning processes and to introduce new aspects of the occupational domain. I have created assessment tools to provide specific feedback to students.»

5 Preliminary conclusions

Even if we have provided just a few excerpts from our interviews to try and illustrate the three areas upon which we have focused, pedagogy, resources and assessment, where pedagogy is the core dimension around which all other are integrated, and even if our study is still under progress, we may already identify some issues that despite initially shocking may provide suggestive reflections.

First, to our surprise, the most experienced teachers are and, therefore, the older they are, the more open, less reluctant they show themselves in incorporating digital competencies to their teaching and learning practices, even though these are part of a wider and better developed understanding of what pedagogical knowledge and practice is. The overall pedagogical understanding of their trade is the relevant aspect that gives meaning and sense to the incorporation of a digital perspective. We have of course found some example of younger less experienced teachers with a similar holistic approach to digital competencies, but that has been the case among those whose training was embedded in a digital pedagogy view and with much specific training behind it, as was the case Spain7.

Second, the use of resources is a support from which teachers feel enriched but it is the least relevant one among the different dimensions we have studied. Even if it may seem the

most updated one, rapid change makes it vulnerable and teachers stick to their preferred tools and resources, particularly those who want to have an approach to them as producers and not just consumers: these are the teachers that want to foster their students' creativity and ability to handle the tools instead of being subject to a limited use. In this sense, some tools prove to be powerful while others become less relevant for their restrictions in use. All teachers in our sample were also clear that resources are resources and that they must obey the interest of an overarching pedagogy, without which tools may become useless.

As for assessment, it is probably the least developed area among our teachers and one dimension that needs to address both technical and ethical issues. Most teachers rely upon assessment criteria among which digital dimensions are not so present. However, most of the teachers in our sample reckon there is wide room for a better understanding of assessment as an educational practice rather than a punitive one, a vision that using digital tools may enhance.

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Biographical notes

Dr. Jorge Lizandra, Dr. Cristóbal Suárez and Dr. Alicia Ros work at the University of Valencia, Spain; where they lecture in Teacher Education. Dr. Lizandra and Suárez research interests cover the domain of digital competence of teachers; while Dr. Ros research interest covers is about the education of VET teachers.

Prof. Dr. Fernando Marhuenda works at the University of Valencia, Spain, where he lectures on Social Education. Current coordinator of the research group Transitions, education-work relations and the development of VET in relation to social inclusion.