



## **Working paper**

# **VET providers and the challenge of TEL: enhancing teachers and trainers' e-skills**

## Foreword

In 2017 Cedefop set up the Community of Learning providers together with VET4EU2, the umbrella organization regrouping EfVET, EVBB, EVTA, EUCEN, EUproVET and EURASHE, the 6 Associations active in VET at EU level to better ground its work on providers' needs and priorities and to share its work results with providers' broader audience EU wide.

It was agreed the Community to have a strong brokerage function, to work on a voluntary basis, to privilege demand-side and promote practical applications. Producing concrete practical guidance for practitioners and suggestions to the EU Commission on selected themes have been the Community's objectives under its motto of *Think European Act Locally*.

The Community started experimenting with its functioning by defining its first (2017-2020) work programme focusing on VET providers<sup>1</sup> and three priority areas for them namely on VET providers' role in enhancing the use of TEL in their institutions; in supporting their staff mobility and in promoting third country nationals (TCN) integration and empowerment through learning. Next, the Community set up three working groups (WG) to address these themes respectively; each WG being coordinated by an association representative and consisted mainly of providers, professors and teachers experts on the specific theme and members of the above mentioned six associations. The WGs proceeded through information sharing and expert cooperation starting with participants' experience and expertise, Cedefop work and EU Commission related programmes, policies and co-financed transnational projects. The WGs worked through meetings and regular correspondence per e-mail mostly while the set-up of an online platform to complement the Community is under refinement at present.

Due to policy calendar imperatives, the Community was asked to deliver almost one year earlier than foreseen. Despite this change, we think that the present working paper captures all-important messages and issues WG1 wished to convey. This document is the outcome of the WG1 work on "VET providers and the challenge of TEL: enhancing teachers' and trainers' e-skills". In September 2019 a summary of

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<sup>1</sup> In the context of the present initiative , we refer to VET-providers as to those organizations, public or private, specifically set up to provide training and qualifications usually up to EQF 5 sanctioned by a recognized by the government diploma/title leading to employment and/or further studies

this report together with those of the other two WGs on mobility and migration respectively were published and presented during the European Vocational Skills Week (EVSW) 2019 in Helsinki. The reflections on TEL made during the EVSW have been incorporated in the present report. The group was coordinated by René van Schalkwijk, former EUproVET president and supported by Tina Bertzeletou, Cedefop VET expert. The reader will find WG1 composition and working method in Annex 1. Besides this annex, the paper comprises three more annexes: one on the DigCompEdu framework, another on good practices in TEL and the last one on the definition of terms used in the text.

Cedefop wishes to thank WG1members for their frank cooperation and rich contributions all through the last two years, it wishes to acknowledge in particular René van Schalkwijk' s commitment to WG1 and his enthusiasm for the whole Community-project that marked its outcomes and point also towards its future development.

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## Introduction

Technology has been primordial to learning and humankind evolution. From the discovery of writing to book printing and the use of film and television, education has always developed with and alongside technology. More recently, new technologies have been integrated in the educational process with computers. We are now standing on the brink of the next wave of changes with the development of digitalization, artificial intelligence (AI), robotics, Internet of Things (IoT) and virtual reality.

In Vocational Education and Training (VET) technological developments have always posed two challenges:

- a. How to ensure that students would be prepared for the use of new technology in their work and society
- b. How to use technology as a means of increasing the productivity and quality of the educational/learning processes.

The present working group (WG1) focuses on the second challenge while realising that it helps meet, at least partially, the first challenge, too.

Taking into consideration that, in the future, about 90% of jobs will require some level of digital skills; that 40% of EU firms are seeking to recruit ICT specialists and struggle finding them and, that 65% of children entering primary school will find themselves in occupations not existing yet<sup>2</sup>, it becomes obvious that digitalization and robotics are drastically changing the world of work. Considering also that 44% of Europeans do not have basic digital skills (169 million between 16-74 years), it becomes urgent to reinforce technological education and training in order to close the existing IT skills gap and avoid further skills polarization and job destruction in labour markets.

However, this is easier said than done because many technological and digitalisation effects are still unforeseeable. The stabilizing function that education has traditionally in society - by following rather than jumping on every new development- will not work in the future anymore. It is certain that digitalization and automation will continue to further transform the ways of production and interaction among people, machines, information and communication technologies.

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<sup>2</sup> [https://ec.europa.eu/commission/sites/beta-political/files/leaders-working-lunch-innovation\\_en.pdf](https://ec.europa.eu/commission/sites/beta-political/files/leaders-working-lunch-innovation_en.pdf)

Although not identified yet, potential social risks might be extremely high and education and training systems should address them proactively and move faster in preparing people for the changes to come. For instance, the process of the validation, dissemination and implementation of technological innovations needs to be accelerated to follow the speed of general changes driven by increased intercontinental, economic and geopolitical competition with shifting comparative advantages.

It is within this broader context that the European VET associations represented in WG1 laid down in a position paper<sup>3</sup> their ideas on future developments in education and training underlining the need for joint efforts across all levels of education. This position paper has also served as a background document to WG1, the composition of which can be found in annex 1 of this document.

## **Chapter 1: Why Technology Enhanced Learning requires teachers' and trainers' involvement**

Fast evolving technological trends such as digitalization, artificial intelligence (AI), robotics, and Internet of Things (IoT) are expected to lead to a new division of labour between humans, machines and algorithms. This expected work transformation will be the result of two parallel processes

- a. The decline of redundant or automated tasks and roles and
- b. The emergence of new jobs and roles.

According to a WEF report<sup>4</sup>, the adoption of new technologies and the supply of new products and services are foreseen to lead to a positive balance for the number of jobs globally. However, jobs' frameworks will need to be reorganized and redrawn through the reskilling and upskilling of the workforce. The truth is that it is almost impossible to survive in the present world of work without technology and in the near future, it will be unthinkable. VET providers must prepare learners for current and future work and participation in society under these changing circumstances. In the VT4EU2 position paper,<sup>5</sup> the necessities in this process are highlighted.

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<sup>3</sup> <http://evbb.eu/blog/2018/11/30/position-paper-on-european-union-policy-after-2020-on-vocational-and-educational-training/>

<sup>4</sup> E. WEF Report - <https://www.weforum.org/reports/the-future-of-jobs-report-2018>

<sup>5</sup> <https://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetailDoc&id=38451&no=1>

In any case it means that future as well as present generations of VET learners -and thus of teachers and trainers too- should be equipped with the corresponding digital competences.

Technology has always gone hand in hand with human culture and innovation. The challenge nowadays is in knowing how to use the technological possibilities to get the best out of them. The tools currently available have great potential to enhance education in almost every direction. They can bring the whole world into the classroom and connect us in ways we could not imagine before. They also give us tools for creative production but they do not replace the need for teachers and trainers to guide and help learners understand and learn profoundly.

Learning is a social and a cultural process: we learn with and from each other. The challenge for all teachers is to engage people's minds and hearts in ideas and matters of interest to them. Great teachers understand that teaching and learning is a conversation, not a monologue. In other words, it is a dynamic process, rather than a one-way channel of transmission and TEL provides opportunities to achieve this.

Technology in education enables individuals with different abilities, interests, and dispositions to adjust learning to their own pace of progress. Students, needing extra time can spend more in repeating exercises while their classmates continue ahead enabling teachers to support the former ones on an individual basis. With TEL, teachers can draw from a wide repertoire of activities, techniques, material and strategies, and adapt them to learners' needs taking also into account that with the help of TEL, their students learn continuously even when not at school and without their presence or contribution.

Technology enhanced learning means that educators are no longer limited to the textbooks their institution or government provide or recommend. Using other resources such as video, audio and interactive learning, students learn in many different ways and teachers find creative ways to engage them in studying. Students nowadays often struggle to stay on a task or maintain their interest, particularly if teaching is not stimulating; technology has the merit to make learning more "hands-on" and render engaging the most mundane school tasks. It facilitates individualization.

A specific concern is related to the development and use of Artificial Intelligence (AI) and algorithms and Learning Analytics (LA). Although they can promote greater productivity in the educational sphere, they also represent a serious drawback since they necessarily rely on a large scope and amount of data. Therefore, there is a focus on standardisation and average norms that might lead to the opposite of

personalised learning in the sense that learning will be geared towards standardised results thus eliminating the benefits of differentiated and personalized teaching above-mentioned. In education, both the advantages and the risks of these developments should be taken into account to address and solve the ethical dilemmas ensuring a human instead of a mechanistic approach to education.

Plenty of literature and recommendations exist on the need to upgrade teachers' and trainers' digital skills to allow a more generalized and systematic use of TEL in VET provision. The required future competences for students and citizens have been recently described in digital literacy frameworks, such as the *EU Digital Competence Framework for Citizens (DigComp 2.1)*<sup>6</sup> and UNESCO's *Digital Literacy Global Framework (DLGF)*<sup>7</sup>.

To cope with these challenges the *EU2018 Digital Education Action Plan*<sup>8</sup> foresees several actions to assist EU Member States in meeting the challenges and opportunities of education in the digital era, organized under three areas of priority. The first two priority areas are directly linked to teaching/learning:

- Making better use of digital technology for teaching and learning
- Developing digital competences and skills

Furthermore, the *European Reference Framework of Key Competences for Lifelong Learning*<sup>9</sup> defines eight key competences among which figure also:

- Digital competence
- Personal, social and learning to learn competence

In addition to these skills and competences, recommended by the above learning frameworks, teachers and trainers would need an enhanced “multi-dimensional” skillset of competences. This skillset would combine the cognitive, pedagogical and affective dimensions. WG1 believes that only this approach can facilitate and enhance new forms of learning since it fosters pedagogy for interaction and social learning and promotes the potential of informal and non-formal learning.

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<sup>6</sup> <https://ec.europa.eu/jrc/en/digcomp/digital-competence-framework>

<sup>7</sup> <http://uis.unesco.org/sites/default/files/documents/ip51-global-framework-reference-digital-literacy-skills-2018-en.pdf>

<sup>8</sup> [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018H0604\(01\)&rid=7](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018H0604(01)&rid=7) (an updated DEAP will be adopted by the Commission in Sept 2020)

<sup>9</sup> <https://eur-lex.europa.eu/legal->

Concerning the pedagogical dimension, WG1 considers vital to encourage and support digital pedagogies rather than merely a use of ICT tools and technologies. Inserting “technology by substitution” into present curricula or approaches to education and learning will not be effective. If technology is used to replace an element in, an otherwise unchanged curriculum, it is not really an innovation but only a substitution. The easiest example of substitution by technology would be if a teacher reads a subject from a book and substitutes this by a movie in which the writer of the book reads from the book. Another example of substitution is reading homework from a MOOC instead of a book.

On the other hand, learning to weld using “virtual reality welding” would be only partially a substitution since this technology not only allows more practice in a greater diversity of assignments, but it also saves time and material. Using VR games to challenge creativity would be another innovative approach along this line and would require a real curriculum change.

There are several international, national, and professional frameworks on teachers’ digital and ICT skills such as the European e-Competence Framework (e-CF) 3.0, UNESCO’s “ICT competency framework for teachers”, “7 elements framework” by JISC and Mozilla’s Web Literacies. However, these frameworks either:

- focus solely on professional, technical or managerial competences, lacking a pedagogic dimension (like e-CF, Mozilla) or
- are developed for higher education educators (like JISC) or
- are most appropriate for policy purposes (like UNESCO).

We believe that DigCompEdu is at present the most appropriate since it is the framework specially designed for assessing and developing teachers’ TEL skills in VET and Adult Education.

We suggest therefore implementing it as defined by the DigCompEdu and developed by the European Joint Research Centre<sup>10</sup>. It identifies six focus areas on different aspects of educators’ professional activities:

1. Professional Engagement
2. Digital Resources
3. Teaching and Learning
4. Assessment
5. Empowering Learners
6. Facilitating Learners’ Digital Competence

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<sup>10</sup> [http://publications.jrc.ec.europa.eu/repository/bitstream/JRC107466/pdf\\_digcomedu\\_a4\\_final.pdf](http://publications.jrc.ec.europa.eu/repository/bitstream/JRC107466/pdf_digcomedu_a4_final.pdf)

**Our belief is that VET teachers and trainers should be facilitated to self-assess and constantly develop their digital competences. The key to success in this process is motivation. This means to consider the acquisition of their future e-skills as a professional developmental journey.**

Consequently, we would need to

- a. Facilitate teachers and trainers training to master TEL
- b. Provide the infrastructure allowing them to use such competences
- c. Acknowledge formally the results of such process: VET providers, institutions, should guarantee the upgrading of teachers and trainers civil society as a form of recognition.

VET educators must be stimulated to accept positively and begin their journey to build and further enhance their digital competences. This requires an effort that has been underestimated until now. **If we want to answer to the challenges of the digital age and avoid a digital and social divide, a major investment is needed in the professional engagement and development of teachers and trainers in order to reap the benefits technology is offering for making education more effective, more productive and more personalised.**

A [survey by DG EMPL on VET](#) response to COVID-19 emergency also highlights the importance of increasing digital skills of teachers and trainers.

The EU has collected a substantial amount of information relevant to online learning resources and tools for learners, teachers and educators across the Member States and has published a selection of these that can be used for distance learning during the outbreak of COVID-19.<sup>11</sup>

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<sup>11</sup> [https://ec.europa.eu/education/resources-and-tools/coronavirus-online-learning-resources\\_en](https://ec.europa.eu/education/resources-and-tools/coronavirus-online-learning-resources_en)

## Chapter 2: Action speaks louder than words

In many documents the need for and the necessity of stimulating technology enhanced learning is confirmed. So *why* this is necessary, seems undisputable. In the previous chapter, broad actions responding to the *why* have been outlined and they seem undisputed. We will now look into *what* is necessary in order to achieve the aims and goals defined.

CEDEFOP's briefing note on the *Professional development of VET teachers and trainers* underlines that “*while VET teacher and trainer professional development has been on the EU education policy agenda for many years, it has not been sufficiently visible in the national policies*”<sup>12</sup>.

Currently there is a wealth of observations confirming that more effective and targeted teaching staff action is needed in this field.

The European Joint Research Centre has also published a Science Policy Report on *Promoting Effective Digital-Age Learning: A European Framework for Digitally-Competent Educational Organizations*<sup>13</sup>. Within the area of professional engagement, section 3.3 focuses on teachers' professional development considering “*teachers' continuing professional development a requirement for relevant and high-quality digital-age learning*”. **The mere fact that there is a debate on how to avoid a digital divide through education proves that the policies in place for the continuous professional development (CPD) of teachers and trainers are not sufficient.**

The OECD report “*Supporting Teacher Professionalism*”, notes that professional development increases teachers' professionalism and satisfaction especially in schools with higher proportions of socio-economically disadvantaged students<sup>14</sup>.

Teachers' continuous professional development (CPD) is often based on self-assessment and benchmarking. Tools such as SELFIE (also in its specific version for work-based learning<sup>15</sup> and ECDL can be helpful in benchmarking VET teachers' and trainers' digital skills. However, they are only a means of raising (self-) awareness and are not sufficient in themselves. Mentoring has proven a successful method to support and facilitate teachers and trainers in using digital technology with less stress and greater efficiency.

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<sup>12</sup> <http://www.cedefop.europa.eu/en/publications-and-resources/publications/9112>

<sup>13</sup> [http://publications.jrc.ec.europa.eu/repository/bitstream/JRC98209/jrc98209\\_r\\_digcomporg\\_final.pdf](http://publications.jrc.ec.europa.eu/repository/bitstream/JRC98209/jrc98209_r_digcomporg_final.pdf)

<sup>14</sup> [https://read.oecd-ilibrary.org/education/teacher-professionalism\\_5jm3xgskpc40-en#page1](https://read.oecd-ilibrary.org/education/teacher-professionalism_5jm3xgskpc40-en#page1)

<sup>15</sup> <https://ec.europa.eu/social/main.jsp?langId=en&catId=89&newsId=9761&furtherNews=yes>

One of the draft key messages of the *Working Group on Digital Skills and Competences (2016-2018)*<sup>16</sup> is that “*the holistic, organisational approach to digital change has been identified as a key driver for the development of digital education*” and it is vital to move towards more digitally confident and capable institutions. **TEL has to become the central point of planning for innovation and change in terms of pedagogies, infrastructure and institutional strategy.**

Encouraging the development, at school level, of an organisational climate positive to digital technologies is crucial, and there is a great need to introduce and support school leaders in developing digital teaching and an appropriate learning mind-set. “*There is a great need for the support and involvement of school leaders (including school management), teachers and students, so that each institution can respond to digital transformation and embed digital technologies and the development of digital skills and competences in a meaningful and strategic way*”.

However, identifying, documenting, acknowledging and rewarding the quality of teaching remains a challenge for many VET systems and institutions. In TEL environments, teachers have to play more roles than in the past: they become learning facilitators; they provide individual monitoring and support and encourage learners towards self-direction and autonomy. In other terms, teachers act not only as knowledge transferors -as in the past- but also as brokers and mediators between learners and knowledge. Hence, in addition to the generic DigCompEdu<sup>17</sup> competences, VET teachers and trainers need to develop a learner-centric pedagogical mind-set in order to apply those learning methods that would allow their students to deeply understand and recreate knowledge and apply it to their work as needed. Consequently, this shifting in teachers’ roles must be taken into account and reflected upon **the curricula of teachers’ initial training and further education.**

**It is important to realize that a lot of innovative and technology based solutions are already used in practice.** The *Good Teaching Practices Competition and Inventory of Good Practices* compiled by the Open Education Europa portal in 2015<sup>18</sup> revealed a surprising high number of innovative VET teachers and trainers across Europe willing to invest the extra effort to share with their peers - their practices and lessons learned even in a foreign language. However, **the lack of a community of practice accessible to all restricts the possibilities of**

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<sup>16</sup>[http://ec.europa.eu/assets/eac/education/experts-groups/2016-2018/et-2020-group-mandates\\_en.pdf](http://ec.europa.eu/assets/eac/education/experts-groups/2016-2018/et-2020-group-mandates_en.pdf)

<sup>17</sup> See footnote 6 ( [http://publications.jrc.ec.europa.eu/repository/bitstream/JRC107466/pdf\\_digcomedu\\_a4\\_final.pdf](http://publications.jrc.ec.europa.eu/repository/bitstream/JRC107466/pdf_digcomedu_a4_final.pdf))

<sup>18</sup> <http://openeducationeuropa.eu/>

**dissemination and co-learning.** The quality and effectiveness of VET would have been much higher if such experiences could have been shared more easily <sup>19</sup> .

**One necessary requirement for facilitating the learning and development of teachers and trainers' TEL-competences is to form a community of practice.**

Communities of practice can take any form or scope. A community could be local, regional, national or international. In VET for instance, communities could take the form of direct contacts between teachers exchanging best practices within the same school. **We define as community of practice in VET groups of professional practitioners who aim to enhance, in the interest of their students and learners, the quality and output of teaching and learning in relation to their educational goals and the students' time investment to reach them. The professionals attain their didactical and pedagogical goals through knowledge and expertise sharing on an ongoing basis.**

A community of practice in TEL would focus at sharing effective applications of technology in the educational process in relation to pre-defined learning goals and the time and efforts needed to achieve them. The report *Boosting teacher quality* [DG EAC, 2018] concludes in relation to networks<sup>20</sup>:

*“Research has found that teacher networks combining online and offline interaction and thus offering opportunities for face-to-face interaction had higher levels of participation and satisfaction among their members. In some cases, however, passive participation in a network can be a step prior to becoming more actively involved (p.58). Online participation in teacher professional networks is enhanced by high-quality designs and professional facilitation of the networks. Teachers tend to prefer school-based professional learning communities to online networks, but the two forms increasingly merge, and these blended models are seen as effective because of greater levels of trust and reciprocity.*

*In TALIS, half of the teachers surveyed perceived conflicts with their busy work schedules to be the major barrier to professional development. The future might lie in merging online networks and offline professional learning communities in blended models, which are not only more effective but also easier to align with the teacher work schedule. Evidence shows that teachers will most likely participate in*

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<sup>19</sup> [http://ec.europa.eu/assets/eac/education/experts-groups/2016-2018/et-2020-group-mandates\\_en.pdf](http://ec.europa.eu/assets/eac/education/experts-groups/2016-2018/et-2020-group-mandates_en.pdf) (see footnote above)

<sup>20</sup> Boosting teacher quality - <https://publications.europa.eu/en/publication-detail/-/publication/95e81178-896b-11e8-ac6a-01aa75ed71a1/language-en>

*these networks and communities if their involvement promises support in solving real problems encountered in their teaching.”*

With the above in mind, WG1 adopted a double perspective in its work: Next to sharing own experience and expertise on the subject, group members tried to form a small community of practice in TEL. From the start, members were invited to share good practices from their own background. Some of these good practices are presented in annex 3. Although it sounds self-evident, the **starting activity of any community of practice is gathering examples of good practices to share and discuss.**

The idea was also to form an online platform on which WG1 could work together. After consideration, the Yammer platform was chosen to start with. However, members were immediately confronted with the well-known fact that an online platform cannot **perform if it does not meet predefined technical, functional and training requirements.** This led us to search for an alternative platform and to conclude that **to build a working -on line- real time platform as part of a community of practice, the necessary funds to pay for a suitable one must be available otherwise the operation is compromised.**

DG EMPL has proposed to set-up a Community for European VET practitioners in the Electronic Platform for Adult Learning in Europe, EPALe.<sup>21</sup>

WG1 has not been successful in enlarging the cycle of its members either since invitations addressed to other experts in the field remained largely unanswered mainly due to **the language barrier.** Despite the fact that in the TEL sector English is largely used, both community contributors and users prefer working in their language and not in English exclusively. Limiting the community to those teachers and trainers in VET who master English sufficiently well would greatly limit their participation. This would greatly limit the wealth of existing effective practices. Consequently, **for the online part of an EU-wide community of practice to be effective, separate communities in individual Member States or in different linguistic areas should be set up. Best practices could be translated and uploaded on an EU platform.**

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<sup>21</sup> <https://epale.ec.europa.eu/en/practitioners-in-vet>

## Chapter 3: How to proceed to realize a quantum leap in Technology Enhanced Learning

Technology Enhanced Learning needs to take a quantum leap since there is an urgent effect on the society as a whole. At present, EU policies focus either on achieving a digital single market by promoting the effective use of digital facilities across Europe<sup>22</sup> or on bridging the digital skills gap in the labour market.<sup>23</sup> However important these might be, they can also increase the existing digital or technological divide that affects all strands and activities in our society. If we consider the difficulties Member States still face in their efforts to lower the percentages of illiteracy and lack of numeracy at national level, the number of people who are or will become digitally or technologically illiterate cannot but alarm us. Although the official discourse sounds comforting, we must conclude that in the light of the challenges ahead, insufficient *structural effective attention* has been paid to the much needed educational quantum leap. In addition and although the EU recognises in its Digital Education Action plan 2018 the importance of digital education for Higher and general education, **it leaves out the importance of VET.**

The European Commission will adopt in September 2020 a new Digital Education Action Plan (DEAP), to complement the work undertaken since the DEAP<sup>24</sup> of 2018.

The ET2020 working group on on innovation and digitalisation in VET, will publish a final report/output in the 4<sup>th</sup> quarter of 2020; [https://ec.europa.eu/education/policies/european-policy-cooperation/et2020-working-groups\\_en](https://ec.europa.eu/education/policies/european-policy-cooperation/et2020-working-groups_en)<sup>25</sup>

In the previous chapter, we concluded that it is self-evident that there is a need for more action for a greater efficiency and effectiveness in using TEL in VET. Several policy intentions with a strong focus on teachers and trainers have been repeatedly formulated. We are also convinced that realizing a Community of Practice for teachers and trainers, supported by an online platform, **is a necessary but not sufficient instrument to speed up innovation and change.** It is necessary because the traditional policy process starting with practical experience leading to research

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<sup>22</sup> <https://ec.europa.eu/digital-single-market/>

<sup>23</sup> [https://ec.europa.eu/digital-single-market/sites/digital-agenda/files/digital\\_skills\\_and\\_jobs\\_coalition\\_members\\_charter\\_0.pdf](https://ec.europa.eu/digital-single-market/sites/digital-agenda/files/digital_skills_and_jobs_coalition_members_charter_0.pdf)

<sup>24</sup> <https://ec.europa.eu/digital-single-market/en/news/specific-actions-digital-education-action-plan>

<sup>25</sup> This working group discusses the role and potential of innovation, with a focus on digitalisation to create more flexible, sustainable and high-quality vocational education and training (VET) systems. This involves examining innovation and digitalisation within VET and its link to other pathways, but also reflects the impact of broader trends of innovation and digitalisation in the economies and labour markets on VET (e.g. industry 4.0, automation, artificial intelligence).

and, from research findings and dissemination, to policy and then to implementation takes far too long. We have already referred to several preconditions on how to make such a Community of Practice a success.

WG1 reflected on how to boost interest for Technology Enhanced Learning. First, we think that **a TEL strategy encompassing all levels of the educational cycle and defining all TEL-related responsibilities is necessary.**

We should be aware that we have a long way ahead but we should acknowledge that and walk it. As the World Economic Forum Digital Platform states:

*“The demands being made on governments are diversifying, deepening, and quickening. Traditional policy development lags behind technology innovation, though citizens increasingly expect the public agencies, they rely on, to take more innovative approaches to their responsibilities. Traditional governance structures and policy-making models have to evolve from cumbersome and slow, to agile and responsive. Truly agile governance acknowledges that policy development is no longer limited to governments.”-*

**It would be utopic to think that such transformations can happen only at grass root level without transformations at policy level, and especially in the public sector.** This new era, marked by rapid technology advancement, innovation and digital transformation, is strongly calling for new approaches.

**Governments could adopt the establishment of educational innovation departments (in the frame e.g. of ministries of education/national VET or of educational institutions) as mandatory standard.** Such departments would guide and support the grass root level in digital and innovation transformation in an interactive way. It is important that these departments consist of people experienced both in working at grass root level in colleges and in Technology enhanced teaching and learning.

**We think that for every institution, be it at European, national, regional or VET provider’s level; a strategic action plan is needed to ensure ongoing innovation and the development of a learning culture. This will need a thorough top down agreement on the direction of change the institution will take.** The ambitions set out in the “Digital Skills and Job Coalition charter”<sup>26</sup> and the “Education Digital Action plan”<sup>27</sup> launched by the EU Commission are good starting points. **However,**

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<sup>26</sup> <https://ec.europa.eu/digital-single-market/en/digital-skills-jobs-coalition>

<sup>27</sup> <https://ec.europa.eu/digital-single-market/en/news/specific-actions-digital-education-action-plan>

**initiatives, actions and funding should be more aligned to large-scale ambitions and to VET. We know already that many of the ambitions will not be met by 2020. Progress will have to be supported by the EU and considered a critical performance indicator by the European semester process.**

**A strong policy support for and vast training and upskilling programs for school leaders, teachers and trainers are necessary including restructuring teachers' initial education and CPD programs.**

In this process, the forerunners in TEL among school leaders, teachers and trainers could become participative developers and the driving force in introducing TEL and further enhancing digital technologies in their schools. In acknowledging their role and capabilities, these innovative VET teachers and trainers could become role models inspiring others at local, national, European level.

**These TEL pioneers can be empowered by bringing them to the spotlight in a constructive manner, e.g. through the organization of TEL awards, and webinar series to share their innovative experiences and inspire peer learning and the creation of virtual communities of good TEL practitioners.** Quality achievement in TEL and its impact on learners could be further demonstrated through connecting TEL to skills competitions such as Euroskills<sup>28</sup>. We are certain that many in these groups would welcome this opportunity; and once this done others will follow.

**The current development of a specific Selfie tool for work-based learning<sup>29</sup>, based on DigComp Edu, will help VET providers, teachers and trainers to diagnose, recognise, and accept eventual knowledge gaps to remediate through tailor-made action.**

**An EU-wide benchmark of educators' digital competences could further enhance the use of TEL in VET and facilitate the implementation of an upskilling policy targeting VET-teachers and trainers.** In fact, strengthening teachers' and trainers' TEL knowledge and skills is a prerequisite to any policy for improving the use of TEL in schools and VET.

**In their development planning, VET teachers and trainers should not be left alone. They should have opportunities to engage socially and learn from each**

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<sup>28</sup> <http://www.euroskills2018.com/>

<sup>29</sup> <https://ec.europa.eu/social/main.jsp?langId=en&catId=89&newsId=9761&furtherNews=yes>

**other and collaborate with peers in knowledge-networks and in their virtual and local communities of practice.**

Taking stock of already existing national initiatives, **an investment should be made to develop platform software for online communities of practice to be used both at national and European level.**

This should become a high priority for the EU, the Member States and VET-providers, teachers and trainers alike. Consequently, in the field of digitalization, restructuring curricula and educational programs and methods and didactical approaches, innovating, researching effects, developing communities of practice and investing in upskilling teachers and trainers should become a high investment priority for the training period after 2020. **In this perspective, a similar action as the one foreseen in the Education Digital Action Plan<sup>30</sup> would be necessary for VET:** *“create a Europe-wide platform for digital higher education and enhanced cooperation. The new platform, supported by Erasmus+, will serve as a one-stop -shop and offer: online learning, blended mobility, virtual campuses and exchange of best practices among higher education institutions at all levels”*.

To develop and support this we **need stronger and innovative mobility opportunities of VET personnel.** These could include like study visits of VET teachers/operators for promoting TEL excellence at different levels (first at local, then at national and eventually at European level); an EU proposal could support them and the experience gained by the former Cedefop catalogue of study visits could be further exploited to meet the new challenges of TEL.

**More generally, we propose to make the support to developing TEL a strategic priority in EU funding. This could be done by earmarking part of the increase of the Erasmus+ budget to project and mobility activities for Technology enhanced development and exchange.** Funding for research and innovation could also be directed to the development of VET (education) and of new pedagogical and didactical approaches to make sure that TEL is not simply used as another tool within old curricula.

This community of practice could also develop a European research and professional development and innovation centre. Similar national centres and institutions could support such a centre. In the long , this centre might not even need a physical address

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<sup>30</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2018%3A22%3AFIN>

but could operate through viable networks of forerunners, researchers, innovators and teachers and trainers interested in cooperation and co-creation in the fields of innovation, research on effectiveness and relevance of TEL and the safeguard of values and ethics when using TEL and data analytics in VET.

Finally yet importantly, we should be aware that nothing is more frustrating in developing TEL than the lack of financial resources to invest in the technology needed. **European and national funding strategies can be best aligned to support both the necessary education and upskilling of teachers and trainers as well as to create the financial instruments to invest in the necessary technology. In addition to aligning present funds to TEL, we would need a specific VET development fund for TEL projects. Like the focus on AI development and investing in getting ahead in this field, a broader TEL focus for such a fund is necessary.**

*If we want to protect our societies and the European Union from a new social and economic divide with “new digital haves” and “digital have not’s” we are compelled to act now.*

## **Annex 1 Composition of WG1 on Technology enhanced learning**

### **Coordination**

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6. Mr Marko Kemppinen ( EUprovet member, Satakunda Educational Federation, Finland)
7. Mrs Natasa Kristan ( EUproVET member, School Centre Kranj, Slovenia)
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9. Mr Szopa Marek (EVBB member, Polish Chamber of Training Companies, Poland)
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11. Mrs Alicia Leonor Sauli- Miklavcic ( EURASHE board member, Technical School Centre Maribor, Slovenia)
12. Mr Stefano Tirati ( EfVET board member, LearningDigital.EU, Italy)
13. Ms Lucillia Santos (EUCEN board member, University of Lisbon, Portugal until January 1<sup>st</sup> 2019)

## Working method

The present document is the result of WG1's work between May 2017 and April 2019<sup>31</sup>. Members came together in May 2017 to set up this group on a voluntary basis wishing to learn from each other and share their knowledge and ideas on what means working in the field of TEL now and what should be considered in the future.

The working group decided to focus on VET providers' needs and priorities, to privilege practical applications, display the benefit of its work and reflect on the idea of a real-time online platform for VET providers, managers, teachers and trainers. It proceeded with mapping and analysing recent cases of using ICT and TEL proposed by its members. The following principles have guided its work:

- a. Adopt a "learner-centred approach"; focus on technology enhanced learning (TEL) or blended learning and not on ICT exclusively<sup>32</sup>;
- b. Consider the training needs of both youngsters and adults;
- c. Address training in its IVET and CVET forms under the perspectives of lifelong learning (LLL) and of second chance education for early school-leavers and "groups at risk" of exclusion and marginalisation;
- d. Consider teachers and trainers as the most important group of professionals who have to assure the efficient use of Technology in education and training.

WG1 reckons that, due its composition, its work has been limited to certain VET-providers and Member States and consequently, it cannot be representative of the wealth of activities led by VET-providers at national or EU level. However, it hopes that the outcomes of its work reflect the challenges educators are facing in this field

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<sup>31</sup> During this period WG1 met four times (16-17 May 2017; 13-14 March 2018; 5-6 November 2018 and 1-2 April 2019)

<sup>32</sup> It was suggested to avoid using the expression of "e-learning" or even of "blended learning" as closely associated to the past time of distance learning, twenty of more years ago. "TEL" is considered a most appropriate and sufficient term having a broader meaning in the light of the current era of digitalisation that has changed our ways of living, working, learning etc. In this way confusion between terms will be avoided and our documents will be aligned with those of the EU Commission in which exclusive use of the tem "TEL" is made.

**Blended learning** is an education program (formal or informal) that combines online digital media with traditional classroom methods.

**E-learning:** the delivery of a learning, training or education program by electronic means. Whereas:

**TEL** enables new choices for learners. Flexible learning focuses on giving learners choice in the pace, place and mode of their learning, assisted and promoted through appropriate pedagogical practice, supported and enhanced through TEL. Technology can enable new approaches as to how learning is delivered and assessed, and can make certain pedagogic approaches viable and scalable.

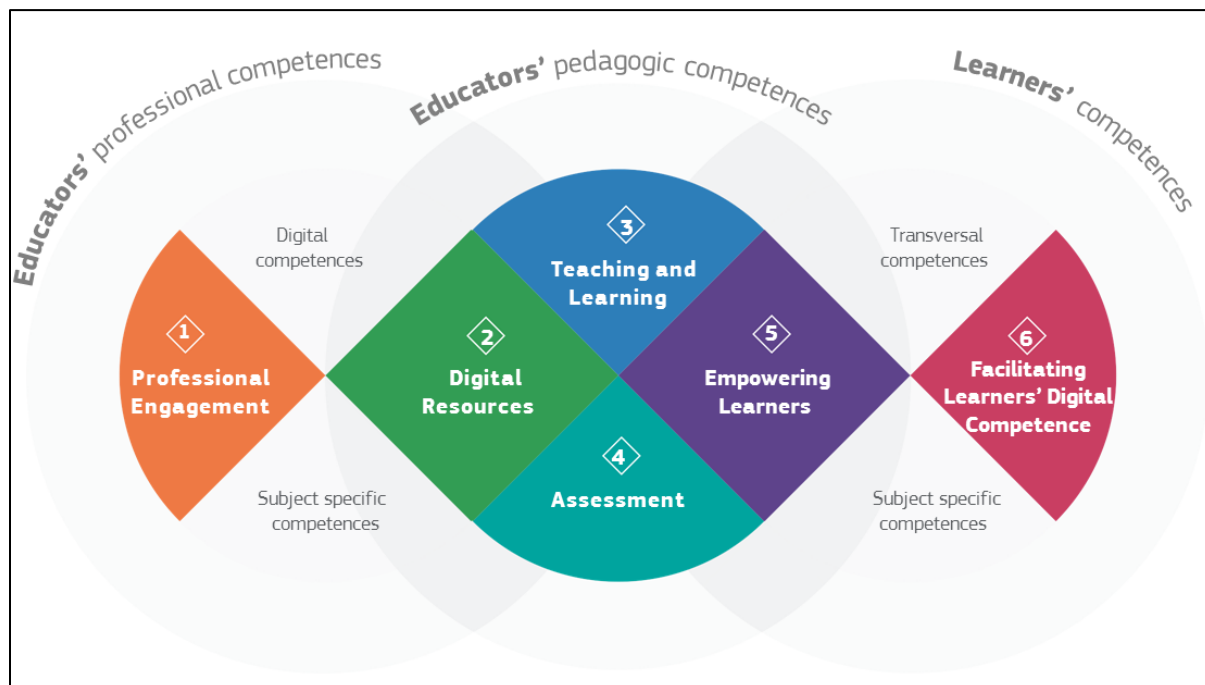
TEL offers opportunities for personalised learning with the learners finding their own pathway through learning material. From an institutional perspective, TEL can offer new opportunities for flexibility in learning and more flexible schemes of study.

and can serve as “food for thought” to all actors involved and in particular to policy makers and VET providers orienting their action towards a comprehensive approach to TEL in learning institutions.

## Annex 2: The fundamental framework for Digital Education and Pedagogy by the Joint Research Centre (JRC)

A short description of DigCompEdu<sup>33</sup> framework developed by JRC is provided below, since it is considered the most relevant reference tool regarding the e-upskilling of teaching staff in VET. The framework identifies six focus areas on different aspects of educators' professional activities:

- Professional Engagement
- Digital Resources
- Teaching and Learning
- Assessment
- Empowering Learners
- Facilitating Learners' Digital Competence



*Image 1: 6 DigCompEdu focus areas*

DigCompEdu encompasses the core dimensions of pedagogic practice (areas 2-4) in all levels of education and links them to two adjacent areas: ongoing educators'

<sup>33</sup> [http://publications.jrc.ec.europa.eu/repository/bitstream/JRC107466/pdf\\_digcomedu\\_a4\\_final.pdf](http://publications.jrc.ec.europa.eu/repository/bitstream/JRC107466/pdf_digcomedu_a4_final.pdf)  
(see footnotes 6 and 13 above)

professional competences (area 1) and subsequent learners' competences (areas 5-6).

Competences in focus areas (1) Professional Engagement and (3) Teaching and Learning as well as areas (5) Empowering Learners and (6) Facilitating learners' digital competence are discussed in this section. Focus areas (2) Digital Resources and (4) Assessment are discussed separately in sections 3 and 5 of this report respectively.

DigCompEdu adopted six levels of proficiency corresponding to those used by the Common European Framework of Reference for Languages (CEFR) ranging from A1 to C2:

<b>Level</b>	A1	A2	B1	B2	C1	C2
<b>Capability</b>	Awareness	Exploration	Integration	Expertise	Leadership	Innovation
<b>Teacher development stage</b>	Newcomer	Explorer	Integrator	Expert	Leader	Pioneer

These levels should not be considered static but rather as fluid levels of activity, descriptive indicators of interest, practice and experience.

Once the process has started, policies should foster actions and interventions aimed at helping VET teachers to master at minimum the A2 level (Exploration) and whenever possible progress to the B1 level (Integration). At the A2 proficiency level educators are aware of, interested in the potential of digital technologies, and have started using them in some aspects of their practice. Educators in the B1 level experiment with digital technologies in a variety of contexts and for a range of purposes integrate them in their practice and reflect on their effectiveness.

### **Annex 3. Examples developments of good practices in technology enhanced learning (TEL)**

During its work, WG1 shared many examples of good practices. Below several of the most pertinent to the group's aims cases are presented briefly with their internet links if available for direct consultation. They prove that even when circumstances are not optimal, teachers and trainers make proof of creativity to respond to their students' needs and interests. They also indicate a wealth of ideas, innovations that could further stimulate new solutions, and approaches provided they are disseminated and shared among interested actors with the support of a good working community of practice.

To start with here are some illustrative good practices.

1. In Spain, a teacher created an Internet radio station to facilitate the construction of oral foreign language skills. Students assumed all authentic tasks related to the production of radio shows in a foreign language. Another engineering trainer used a flipped classroom approach; he created a blog where he posted explanatory videos of underlying mathematical concepts and used classroom time to solve problems and examine practical applications.
2. In Lithuania, students in a VET school learned project management by designing and implementing real projects, such as a virtual guide of local enterprises.

*There are also example where TEL is being used to attract and reach out to drop outs or illiterates migrants etc.*

3. A specific example in France where TEL is used by AFPA for instructing the poorly educated, like prisoners, illiterate people etc. and for introducing migrants/refugees to the French reality and culture. AFPA is also using ICT to combat digital exclusion with the help and involvement of peer groups. A MOOC for learning French as a foreign language has been developed for the refugees/migrants who have been moved from the Calais camp. The MOOC FLE (Français Langue Étrangère)<sup>34</sup> by AFPA targets foreign trainees hosted in the AFPA centres and aims at preparing them for their professional insertion.
4. Similar in Poland 1) Adaptive learning; 2) Social learning; 3) Gamification and 4) Microlearning are the four most promising methods of TEL to use to

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<sup>34</sup> [https://mooc.afpa.fr/courses/course-v1:afpa+MOOC\\_FLE\\_replay\\_2020+2020/about](https://mooc.afpa.fr/courses/course-v1:afpa+MOOC_FLE_replay_2020+2020/about)

attract (potential) dropouts. Examples used by the University of Silesia in Katowice and the Polish Chamber of Training Companies in Warsaw are

- a. Adaptive learning is the personalization of teaching and its orientation to the needs and abilities of individual students. This emphasis on adjusting the content to the level of understanding of individual participants of the educational process, to study and check how individual people in the classroom deal with a given part of the material could be seen at every step. Not only during workshops dedicated to developing individual talents of students using new technologies. This type of methods aims to attract children from poor families, immigrants and elderly people. Different solutions include Google for Education, Microsoft in Education or Apple Classroom.
- b. Students can open their free accounts and communicate with the teacher by sending files, chatting answering questions, competing by solving quizzes etc. It is accessible only for students having an account in our internet domain.
- c. Social learning via networks change the way information is distributed. They are also essential today for the exchange of ideas, ideas or acquiring knowledge. Social networks give almost unlimited possibilities of direct and real-time communication. In addition, this is not just about the fact that many people from the younger generation no longer use electronic mail, and instead use it in communication with social media. At the University of Silesia, they set up websites devoted to interesting topics and then publish interesting and proven information on this subject. An example is the page <https://www.facebook.com/Ekonofizyka/> where over 500 people follow and comment on posts.
- d. Educational games must be just as playable as the top ones from the top of the sales lists. They must be a pleasure and a challenge at the same time. Moreover, most importantly, you can use gamification in any subject, in the teaching of physics, mathematics or history. Many applications can be used to gamify the content. The most frequently used is Kahoot but there many more applications like Mentimeter, PoolEverywhere, Quizlet, TheTrainingArcade or the e-learning platform Moodle of our university.
- e. Microlearning is about providing content to learners in small, specific "doses", usually 5-7 minutes. No matter if learning refers to the process of building up and organizing knowledge, to the change of behavior, of attitudes, of values, of mental abilities, of cognitive structures, of emotional reactions, in all cases we have the possibility to consider microlearning modules. There are many micro-learning applications like ExplainEverything, Storyline, Animaker, RawShorts etc.

*There are also examples where national strategies try to address the challenges of TEL in the future*

5. In Hungary the Digital Education Strategy (HU) of June 2016 foresees that “digital education should not be a mere version of traditional teaching that is supported with digital tools. They aim to create an open educational environment which is based on new approaches, methodologies and requirements and which reacts to the challenges of the digital age”.

This is implemented by:

- Adding contents for digital education to the training requirements for the following professions: vocational instructors (BSc), engineer instructors and economic as well as in the preparation courses for master’s examination.
  - Providing further digital education to teachers of vocational theoretical subjects and practical instructors.
  - Supporting the introduction of Learning Management Systems in vocational training institutions.
  - Establishing communication channels necessary for the sharing of digital methodologies within and between the institutions.
6. In England the Education and Training Foundation has launched the Enhance Digital Teaching Platform to support practitioners in developing their professional practice using technology. The Platform offers free, bite-size, online training modules mapped to the DTPF. The platform is designed to help practitioners to develop their understanding of how to redefine their pedagogic approaches with learning technologies.
  7. The initiative OpeningUpSlovenia [www.ouslovenia.net](http://www.ouslovenia.net) was presented with the aim of making Slovenia a model state in the field of accessible and open educational resources and complements into reality the policies of the European Commission’s ‘Opening Up Education’ communication. Slovenia wants to make changes in 7 key areas:
    - a. Transform existing educational methods into innovative, dynamic and open learning tools,
    - b. Restore an environment of cooperation between public, private and voluntary sectors of research in order
    - c. Develop and introduce a more open education,

- d. Build legal mechanisms in support of implementing open education,
- e. Construct an open platform of information technologies, contents, services, pedagogical concepts and approaches,
- f. Restore mechanisms for securing a high level of quality and evaluation of services,
- g. Develop digital competencies within the entire educational system, and carry out concrete, cross-dimensional open education projects.

By open by default, we mean ICT based solutions and services for education that are research based and at the same time so straightforward and convenient that all those who can use them will choose to do so whilst those who cannot will not be excluded. By research and innovation, we mean a research environment for open education based on developments in cloud technologies and gaming, personalization of learning and mobile devices and more. We will also present ourselves as an ICT deployment pool for all stakeholders in the European Union.

It is estimated that the shift from closed and offline systems into digital and online channels will affect 10.000 pre-school teachers, 15.000 basic education teachers and 7000 upper secondary education teachers, with 200.000 pupils. The plan to leverage on innovation expenses, as total public expenditure for formal education in Slovenia in 2011 exceeded EUR 2 billion (5.68% GDP). As per focusing on the area of capacity building, key achievements of the project E-competent teacher and E-Education are E-competent teacher framework

- 38,000 participations of educators in 3-day courses
  - Entrepreneurship and Interdisciplinary activities all around Slovenia
  - Around 2,000 young volunteers introduce the basic computer skills to around 5,000 elders every year
8. In the Netherlands, Kennisnet <https://www.kennisnet.nl/about-us/> has already been founded in 2001 at the initiative of different educational sectors. It is now the public organization for Education & ICT. They provide a national ICT-infrastructure, advise the sector councils and share knowledge with the primary education, secondary education and vocational education and training. Together with the sector councils, they enable the educational sector to realize its aims and mission with ICT-support.

The activities aim at: Creating a national ICT-infrastructure for education, providing strategic advice to schools and offering expertise.

Together with schools, Kennisnet develops, explains and diffuses knowledge on the effective and efficient use of ICT. It informs on the use of digital materials, on organizing education more efficiently and on preparing the 21st century skills. Kennisnet targets school boards, school leaders, (ICT) managers and teachers, preferably online.

*We also looked into the role of cooperation and partnerships, inspectorates and leadership as policy drivers promoting Technology enhanced learning. Of course, the situation in this field varies between Member States.*

9. In England, the Education Ministers and Secretary of State have prioritized TEL and EdTech and released a range of funding initiatives such as the National Retraining Scheme and seed funding for EdTech AI. Inspectors are often driven by Departmental/Ministry policy (they exist in part to assure it). Consequently, making TEL a component of a quality framework is a very strong driver of behavior.
10. The focus of the EdTech strategy in United Kingdom is to establish networks and partnerships. As the MP and Secretary of State for Education announced in his BETT Speech, Jan 2019: ‘...we need a partnership approach between educators, innovators, between the technology companies and the government has a role as well; to make sure we work together to forge those brilliant tools for a brighter future for all our children.’

These demonstrator schools and colleges will work with approved technology vendors to illustrate the effective use of TEL in context. The strategy also concentrates on the key themes of building evidence, enhancing learning, reducing costs and workload.

Collaboration has been a key driver for some time in the UK context. The Association of Colleges oversees two successful examples of national peer development programmes (some of which are technology projects) that encourage two-way collaboration. These projects are called [Teach Too](#) and [OTLA](#) (Outstanding Teaching, Learning and Assessment).

In England both [AoC](#) and the Joint Information Systems Council ([JISC](#)) have written extensively about the importance of digital leadership and how to best embed technology in to the curriculum<sup>35</sup>.

In England, the changes in the funding and inspection policies in relation to the adoption and uptake of TEL have generally been weak and small in number.

However, one notable exception in relation to change in funding policy was the 2014 recommendation of the Further Education Learning Technology Action Group ([FELTAG](#))<sup>36</sup> that recommended a 10% mandatory on-line component to be delivered on every learning programme. A requirement which has since been removed.

On the other hand, the Office for Standards in Education ([Ofsted](#)) is the main regulator of quality standards in England. The [Common Inspection Framework](#)<sup>37</sup> for Further Education and Skills was last changed in September 2015, and is currently being re-designed for September 2019. There is no graded element or reference to TEL in the existing framework nor in the draft versions of the 2019 framework. It is believed by the inspectorate that technology is just one of many teaching tools and is not required to be a graded judgement. It does get included in a small number of inspection reports where good practice is found. For example, the work of Blended Learning Consortium run by the Heart of Worcester College and the classroom practice related to the college's [inspection](#).<sup>38</sup>

The same appears to be the case in many European countries:

11. The Swedish national inspectorate – Skolinspektionen – does not grade or inspect TEL as part of the assurance process.
12. In The Netherlands, the Inspectorate of Education oversees quality inspection: <https://english.onderwijsinspectie.nl/>

The Dutch inspectorate:

- stimulates schools and educational institutions to maintain and improve the quality of education they offer;

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<sup>35</sup> <https://www.jisc.ac.uk/training/digital-leaders-programme>

<sup>36</sup> <http://feltag.org.uk/wp-content/uploads/2012/01/FELTAG-REPORT-FINAL.pdf>

<sup>37</sup> <https://www.gov.uk/government/publications/common-inspection-framework-education-skills-and-early-years-from-september-2015>

<sup>38</sup> <https://reports.ofsted.gov.uk/provider/31/130713>

- assesses the quality of education of the individual educational institutes and the education system as a whole and its developments;
- communicates in an accessible way with all its target groups and stakeholders;

TEL is not included as formal criterion; however, some attention is paid to it as a sub-theme of teaching and learning. It has the attention of the inspectorate and may become a theme in future.

13. In Germany, TEL is included in the inspection but only as a minor criterion in the overall inspection process. There is judgement or ranking that refers to this aspect alone. As in the Netherlands, the relevance of the topic of TEL is increasing and the Ministry of Education has published a collection of [\*competences\*](#) that students should reach in this field.<sup>39</sup>

*When questioned, quality improvement specialists and policy staff from the inspectorates of the four countries above stated that it was not likely for technology enhanced learning to become a formally graded component in the next version of each nation's inspection framework.*

*However, many experts indicated that TEL had become a greater topic of interest as student or teacher competency frameworks were becoming embedded in to practice. They also expected it to become at least an informal judgement in future, but for that, inspectors would need training. This seems inevitable.*

*In the development of Technology Enhanced Learning, it is relevant to have an idea where one stands amidst all developments. The stage of development indicates a level of urgency and necessity of initiatives of innovation. The measures needed will vary according this self-assessment. Benchmarking is seen as important for Vet providers, teachers, and trainers. The following examples may be illustrative*

14. [SELFIE](#)<sup>40</sup> a web based "Self-reflection on effective learning by fostering innovation through educational technology", is a new tool being developed by the European Commission with a team of experts to help schools assess where they are at in using technology to support teachers and students. The SELFIE tool is based on the framework for digitally competent organisations , which sets out seven areas that need to be addressed when using digital technologies,

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<sup>39</sup>

<https://www.schulministerium.nrw.de/docs/Schulentwicklung/Qualitaetsanalyse/Download/Qualitaetsanalyse-allgemein/Qualitaetstableau-ausfuehrlich.pdf>

<sup>40</sup> <https://ec.europa.eu/education/tools/selfie>

e.g. leadership and governance practices, infrastructure, content and curriculum and teacher training. What is extremely relevant from our perspective is the recently launched study, promoted by DG EMPL and to be completed by early 2019, to develop a customized set of criteria focusing on WBL in VET. This version will help VET practitioners to find the tool suited for their specific needs and operations and will contribute thus to attain the ambitious objective to reach one million teachers, trainers and learners by end of 2019 (See Annex 1).

15. [EU Talent](http://www.eutalent.org/csr-europe-survey/)<sup>41</sup> a web based, free tool for benchmarking qualitative apprentice training of companies. The tool helps firms hosting –or intending to host– internships or apprentices to self-assess their own training capabilities. The evaluation is based on a simple questionnaire inspired by the principles laid down in the European Quality Charter on Internships & Apprenticeships of the European Youth Forum’s . Developed within the Erasmus+ KA3, EU Talent project by CSR Europe is available in 12 different national languages at [www.eutalent.org/csr-europe-survey/](http://www.eutalent.org/csr-europe-survey/)
16. [SOLITY](#): a web based tool aiming to help VET centres to self-assess and evaluate the social utility of their activities. The model has been successfully experimented in France by AFPA, whose experience and model of Social Utility indicators will be transferred- thanks to an Erasmus+ KA3 project- at European level: SOLITY will provide a benchmarking feature to compare the social utility levels at organizational, regional, national and EU levels. The tool will be available as a prototype by mid-2019.

*There are also many initiatives aimed specifically at the teachers and trainers development*

17. Flexible Professional Training of Trainers in the 21<sup>st</sup> century was designed and developed in-house by University of Patras CVE’s personnel and resources without any external funding.

The CVE U Patras in collaboration with local private collaborators implements the practice nation-wide and it was offered openly to interested trainers and VET teachers.

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<sup>41</sup> <https://www.eutalent.org/csr-europes-quality-framework-on-apprenticeships/>

CVE designed a series of short training programmes that aim to prepare the adult education trainers and VET teachers for professional teaching and learning in the 21<sup>st</sup> century. All training courses are delivered in Greece via blended learning or e learning. Courses include Train the Adult Education Trainer and Train the Blended Learning Trainer.

Among the technology and e-tools used were:

- Virtual Learning Environment VLE/LMS (Moodle)
- Synchronous E-learning platforms (WebEx)
- Social Media (Facebook, Twitter)

Over 400 trainers and VET teachers were successfully trained. It achieved the rapid, affordable and effective transfer and application of expertise and educational best practices to a wide audience of new and upskilled teachers contributing to the enhanced of teaching and learning quality in various sectors of education and VET.

18. In Slovenia, there was a consortium of public institutions, NGO and companies with the National Education Institute as leading partner. The project improves competencies for teachers, school ICT organizers and school leading teams. The standard includes six basic competencies: Knowledge and awareness of ICT tools, critical use, Communication and on line collaboration, Search, select, process, evaluate data, information and concepts, Safe use of the web, ethical and legal use of information, Design, produce publish adapt materials, and last competence Plan, perform, evaluate learning and teaching by using ICT. Activities include development and implementation: face-to-face and on-line training (from year 2009 more than 37.000 participants in the seminars) and an annual international conference SIRIKT.

Services for schools include an advisory service for ICT school leading teams, pedagogical support for teachers, technical help for all (schools, teachers, learners etc.), and e-networks of teachers.

New methodology has been developed for courses (seminars) for teachers: at least 50 % on-line, new e-materials to support on-line activities of teachers (in forums; on-line debates; peer learning and peer-assessment), assessment (collecting points for each task).

Virtual classrooms (Moodle), e-portfolio (Mahara), videoconferences (VOX) and other tools of e-material development and interaction between teachers

and pupils. Information system has been developed to administrate the projects (with all details and trainers, counsellors) and participants.

Around 90 % of all schools, including VET were involved and more than 60 % of teachers.

More information can be found under the following links

- [The way towards e-competency – marec 2012](http://projekt.sio.si/wp-content/uploads/sites/8/2015/01/E-solstvo_BILTEN_ANG_2012_screen.pdf) ([http://projekt.sio.si/wp-content/uploads/sites/8/2015/01/E-solstvo\\_BILTEN\\_ANG\\_2012\\_screen.pdf](http://projekt.sio.si/wp-content/uploads/sites/8/2015/01/E-solstvo_BILTEN_ANG_2012_screen.pdf))
- Results 2009 – 2013 – only Slovenian  
([http://projekt.sio.si/wp-content/uploads/sites/8/2015/01/E-solstvo\\_Utrip\\_projekta\\_BILTEN\\_2013\\_final\\_web.pdf](http://projekt.sio.si/wp-content/uploads/sites/8/2015/01/E-solstvo_Utrip_projekta_BILTEN_2013_final_web.pdf))

Promotional videos:

- The right footpath:  
<https://video.arnes.si/portal/api/asset/embed/U1ZZjnYYkYCTM5ed7RhHEvo9>
- E-education consulting for schools  
<https://video.arnes.si/portal/api/asset/embed/v1Nxacp8Tup6dICoMYIt0NBb>

19. In Poland an initiative was launched called the Silesian Festival of Strategic, Statistical and Economic Thinking (**ŚFiStEk**) The project aims to:

- promote information technology literacy,
- analytical decision-making in economics and social sciences,
- promote co-operation to prepare students to work in project teams.

The project was addressed to pupils and teachers from the Silesian Voivodeship and neighbouring areas. It was funded by the university's own funds and business sponsors.

The project was carried out by a partnership made up by:

- academic teachers from the University of Silesia
- business consultants GFKM (Gdańska Fundacja Kształcenia Menedżerów)
- PKO PB Bank, branch in Katowice
- teachers and pupils from 35 schools from 3 provinces

There was a contest between 35 high school teams - 105 students and 35 teachers. Tasks were announced twice a week: on Mondays and Thursdays on 6pm and the participants had 24 hours to solve them. The tasks were announced by email and in social media. The scoring of the tasks depended on the correctness of the solutions and from the time they were sent. The results were announced after each round, what increased engagement of participants. The teams worked in a remote way and communicated by social media. After the 6 rounds, the best 10 teams were chosen and invited to the Grand Finals of the competition, where they worked locally.

The ICT facilities that were used included:

- Web page of the programme with the detailed information, rules and database for all tasks with solutions  
<https://prac.us.edu.pl/~ekonofiz/index.php/pl/sfistek>
- Social media (Facebook) where the tasks and solutions were announced, the participants discussed with each other and with tasks authors  
<https://www.facebook.com/Ekonofizyka/>
- Google sheets to send tasks and collect solutions with their timestamp
- Kahoot like application for the Final Competition on site

The project enhanced the IT- competencies of 35 teachers and 105 students, promoted teamwork at distance and developed competences for working with social media including discussion with business mentors and teachers.

20. An international project coordinated by ENAIP (Italy) was called KEY COMPETENCE IN HIGH INTERACTION LEARNING [www.tkeyhil.eu/](http://www.tkeyhil.eu/)  
This project aims to:
- increase digital and pedagogical competences among teachers by fostering the combined use of the IWB and HIL/OER resources to teach key competences;
  - stimulate among teachers the inclusion of key competences in their lessons, in particularly foreign languages, entrepreneurship, math and scientific disciplines, and learning to learn;
  - generate and share examples considered good practice in using ITC to teach and assess key competences;
  - implement professional networks in order to exchange and spread out ideas and good practises.

The project had adopted the ACTION RESEARCH approach, which means that teachers have experimented, together with their pupils and students, tools, learning resources and pedagogical methods in their classroom during a whole school year. The technology tools that were used were based on experimented teaching and learning in the so-called HIL environments where you can:

- share "contents" on an "interaction touch screen": the content on the screen must be visible to all students simultaneously;
- interact with the screen in a tablet mode using special equipment (pens, pointers etc.) or your fingertips;
- connect your laptop or other input/output devices to the interaction touch screen;
- connect to the Internet, e-mail, social network software, and web-based applications;
- use specific software available for lessons and for interaction within a group of students.

To ensure a highly interactive environment, the focus is also on the use of tools such as concept and mind maps and on the use of teaching strategies such as cooperative learning or collaborative learning. These strategies can foster the transition from a teacher-centred approach based on content delivery to a learner centred approach and to competencies acquisitions.

Therefore, the availability and ability to use specific software to create an HIL environment are considered important factors. In particular, we are talking about the use of software for the production of mind and concept maps, software for managing the learning community (VLEs, online archive, blog, chat etc.), software for creating multimedia presentation (e.g. Prezi), for editing text, audio, video and images. All these tools enhance students' interaction with contents, encourage collaboration among students, foster interaction between students and teachers, and promote an "interactive" learning approach.

The project resulted in:

- a. Sheet that describes teaching activities together with steps and operative guidelines to offer ideas or drafts that can be used in teaching to introduce European key competences.
- b. "Handbook for teachers" includes topics regarding:

- c. The EU key competences
- d. The HIL (High interaction learning) environment
- e. Quick Start Guide about IWB
- f. Quick Guide to mind and concept maps
- g. Educational Resources Directory
- h. In Italy (in 7 Italian regions), Switzerland (Canton Ticino) and Ireland 107 action research projects were developed
- i. In the action research activities 123 teachers and about 800 students were involved.

Interactive environments allow a teaching/learning environment with high interaction, both technologically (using tools such as the IWB, web 2.0 resources, etc.) and for communication, through tools and methods (mind maps and concept maps, collaborative learning, flipped classroom, etc.), and other learning resources that may facilitate meaningful learning and learning to learn.

The TKey HIL action research provided an initial training addressed to teachers. Teachers were trained on methodological skills so that they were able to apply “HIL based” technology in the classroom and support students in the acquisition of key competencies. During the training teachers were helped prepare their own experimental interactive environment’s project, focused on one or more key competencies.

The Tkey project is connected with other two European projects dealing with the development of key competences and HIL tools: SMARTEACH (<http://smarteach.edulife.eu/j/>) and SMARTVET (<https://smartvet.weebly.com/>), which have produced learning materials for creating meaningful learning environments with the Interactive Whiteboards.

21. In Hungary a project was started called Teaching STEAM with pedagogy driven tablet technology - GeoGebra’s smart use in classrooms. The digital pedagogy methods developed by the Association for Hungarian Digital Education (AHDE) are based on the experiences of more than 2500+ teachers and expert members. Using SEOS (smart classroom management software) to enhance the developed pedagogy of the technology experts of Újbuda SMART 11. Ltd, they support unique classroom teaching opportunities offered by GeoGebrabased STEAM teaching materials and an associated educational scheme called GEOMATECH.

The developed methods were taught to teachers of the 7 schools of the district. It was realised that the developed methods make the teaching of STEAM courses more effective in three areas:

- Introduction and teaching a new topic by experience-based teaching;
- Deeper understanding and practice of a known theme
- Assessing/testing the knowledge

The key statements of the selected practice:

1) The schools were equipped with a fully integrated SMART classroom by the ED-TECH provider but the teachers were not able and not motivated to use it. There were several reasons of it but the most important was the lack of pedagogy knowledge and ICT knowledge. Without them, they were not able to use the technology and/or it made unacceptable high workload for them. The teacher training aims to teach the appropriate methods:

- to give the teachers success I using technology;
- to save the time for teachers with ICT supported curriculum-aligned learning objects
- to increase the fun and love to learn of students

2) All digital technology development must be started from pedagogy but not the technology

The keywords/tags of the good practices:

- Personalised teaching (P2P) using tablets
- Collaborative learning using tablets
- Team-work based soft skills development
- Active learning using tablets
- Enquiry based STEAM learning using tablets
- Evidence based learning using tablets
- Pedagogy driven methods for using technology
- Student performance measurement and tracking system
- Mobile technology for teaching STEAM in the classroom

- Fully integrated SMART classroom system
- 35 STEAM/GeoGebra/GEOMATECH teacher were involved in the train the trainer and validated the methods and the system
- It was introduced in BETT SHOW London 2018 (3 presentation) - <https://www.bettshow.com/bett-products-list/four-methods-for-enquiry-basedsteam-learning-using-tablets-how-can-tablets-enhance-pedagogy#/>

This pedagogy-focused Smart Classroom Eco-system with its integral performance monitoring system tracks students and teachers' performance and displays an institution's or individual teacher's performance excellence.

Why this initiative is considered good practice and how it could be transferred to other contexts:

1. unique, because it is pedagogy driven
  2. starting from pedagogy not technology
  3. the thought tablet pedagogy methods successfully focus on
    - personalised
    - collaborative
    - active
    - inquiry based learning approaches
  4. the thought tablet pedagogy methods support most instruction methods and different learning styles commonly used in primary education
22. In Poland an international project was started called Isce4school. The main objective of the project was to develop a methodology integrating computer science with mathematics and physics in post-gymnasium schools based on the pilot program. The goal was realized by introducing innovative teaching methods in mathematics, physics and computer science using Python / SAGE programming.

A key role in the project was the coordination of computer science with the physics and mathematics curriculum for enhancing students' knowledge and skills in the field of computational perspectives (Methods of visualization such as  $f(x)$  planning, numerical methods, computer algebra, data processing.

Unlike many other educational computerization solutions, the project uses interactive learning (Python and SageMath).

The technology and e tools used were:

- Notebook system as a tool for a classroom. The project based on “sagenb” which is a predecessor of very popular Jupyter.org notebook.
- Computer Algebra system - SageMath.org
  - Server-client architecture - University of Silesia delivered servers used at schools.

Interactive books, websites where code and science meet. Example [http://visual.icse.us.edu.pl/methodology/sage\\_in\\_nutshell.html](http://visual.icse.us.edu.pl/methodology/sage_in_nutshell.html)

The results of the project were:

a. Teaching materials for over 20 lessons in mathematics and physics

The materials cover integrated thematic issues. In addition, the materials contained a set of matriculation tasks that can be solved with Sage.

b. Report: Methodology for integrating computer methods with science teaching, including the results of the work and observation of the classes conducted in partner schools, methodological guidelines, and teacher materials.

The results are available, among other on the VALOR dissemination platform, on <http://visual.icse.us.edu.pl/metodologia> and <http://visual.icse.us.edu.pl/methodology>.

Worksheets (including the published work of teachers and students), which may also be valuable material for other teachers are available on the server: <https://sage01.icse.us.edu.pl/pub/> .

c. Educational conferences – about 160 teachers participated, the lectures were filmed and they are available at *You tube* (in English: <https://youtu.be/-cExxuxWKp4>)

Project has common areas with H2020: <https://opendreamkit.org/> and its continuation is <https://jupyter4edu.smcebi.edu.pl>

23. In Italy a project with the name “Robotics driving licence” has been launched under the Educational reform Buona Scuola, for educating teachers in robotics. They have to accomplish a high quality training of 100 hours, validated work-based learning with alternating periods of work to obtain their license. The teacher training is based on the e-learning platform of COMAU and it is articulated according to the following activities and modules:

- Cooperative learning
- Industry 4.0 and Robotics
- Initial onlinetest
- Module 1: Robotic systems and basic procedures
- Module 2: Fieldbus and reference systems
- Module 3: Programming movement
- Module 4: Special procedures and further activities
- Face-to-facetraining
- Final evaluation

Around 200 robotics driving licences have up till now (2018) been issued with another 200 additional certifications.

24. In Slovenia at School Centre Nova Gorica a project was initiated called Tell stories, build games, learn to code. The objective was to stimulate students to enjoy programming, getting new innovative ideas for apps and exchanging of experience, coding applications / games with Alice (<http://www.alice.org/>); we continued the story of Alice). Practice included also brainstorming to motivate students to freely express their ideas and thoughts. The objective of the project towards teachers was also to get familiar with new educational techniques. This project was funded by Google.

During coding week, we fulfilled all of our goals. Each of participants was coding in Alice (<http://www.alice.org/>) at least 2, 5 hours per day. Those who participated at final presentation even more. At the end of the week we made a presentation of applications which were developed through the week. All of presenters were rewarded, especially nine of them. We gave them also certificates (<https://goo.gl/ebx3gU>) that were made out of original poster.

With pupils from primary school, we did a course with “Karel” (<https://hoc.nclab.com/karel/>) which is classical educational programming language. In the Karel course, which lasted 2 hours, pupils were solving puzzles by writing simple programs for a robot. The language has Python code formatting and some Python keywords.

We estimate that Europe Code Week 2017 event at School Centre Nova Gorica was very successful as it is shown by images itself. Pictures are available at: <https://goo.gl/Sf45ys>.

For popularization of the event, we made also our own poster (<https://goo.gl/fwbJSX>).

The practice was implemented on the school centre Nova Gorica in collaboration with local primary schools and Google. 6 teachers and 264 pupils participated.

Out of 61 students from the final class of secondary school 29 are going to study computer science.

## Annex 4 Glossary on technology enhanced learning

Source: JRC Science for policy report, Promoting Effective Digital-Age, A European Framework for Digitally-Competent Educational Organisations, Panagiotis Kampylis, Yves Punie, Jim Devine, 2015

<p><b>Benchmark</b></p>	<p>Standard or a set of standards, used as a point of reference for evaluating performance or level of quality. Benchmarks may be drawn from an organisation’s own experience or from the experience of other organisations in the same field. Adapted from <a href="http://www.businessdictionary.com">www.businessdictionary.com</a></p>
<p><b>Continuous Professional Development (CPD)</b></p>	<p>CPD is the means by which members of professions maintain, improve and broaden their knowledge and skills and develop the personal qualities required in their professional lives, usually through a range of short and long training programs, some of which have an option of accreditation. This job-related continuing education and training refers to all organised, systematic education and training activities in which people take part in order to obtain knowledge and/or learn new skills for a current or a future job. Adapted from <a href="http://www.umultirank.org/#!/glossary?trackType=home&amp;sightMode=undefined&amp;section=undefined">http://www.umultirank.org/#!/glossary?trackType=home&amp;sightMode=undefined&amp;section=undefined</a></p>
<p><b>Curriculum</b></p>	<p>Inventory of activities implemented to design, organise and plan an education or training action, including definition of learning objectives, content, methods (including assessment) and material, as well as arrangements for training teachers and trainers. Source: Cedefop <a href="http://www.cedefop.europa.eu/en/publications-and-resources/publications/4106">http://www.cedefop.europa.eu/en/publications-and-resources/publications/4106</a> Curricula, in the context of DigCompOrg, also refer to ‘courses’ or ‘programmes’ offered by tertiary education institutions or training organisations.</p>
<p><b>Digital competence</b></p>	<p>Digital Competence can be broadly defined as the confident, critical and creative use of ICT to achieve goals related to work, employability, learning, leisure, inclusion and/or participation in society.</p>

	Source: DigComp Framework <a href="http://ftp.jrc.es/EURdoc/JRC83167.pdf">http://ftp.jrc.es/EURdoc/JRC83167.pdf</a>
<b>Digital learning technologies</b>	Refers to the expanding range of standalone and internet enabled devices used by teachers and/or by students in the course of their everyday teaching/learning practices, and includes the enabling software, platforms and services. Devices include computers, laptops, tablets, smartphones, cameras, wearables, projectors, smartboards, 2D, 3D printers, scanners and other peripherals. Software includes general, specialist and education-specific applications, games, ‘apps’ and tools generally (task-oriented and for communication). Platforms include VLE/LMS (Virtual Learning Environments/Learning Management Systems), social media, web portals and repositories. Services include broadband internet connectivity, security (passwords, privacy) and file storage and management. Synonyms: Educational Technology, ICT and education, Technology Enhanced Learning (TEL)
<b>Digital-age learning</b>	Digital-age learning (or Learning for a Digital Age) acknowledges that, almost without exception, life, work, study and leisure take place for all citizens today in a pervasive, highly internet-connected and digitally mediated world. Learning <i>in</i> and <i>for</i> this digital age represents a new challenge for educators and their students.
<b>Digitally-competent educational organisation</b>	Refers to the effective use of digital technology by the educational organisation and its staff in order to provide a compelling student experience and to realise a good return on investment in digital technology. Adapted from Jisc Digital Capability initiative: <a href="https://www.jisc.ac.uk/rd/projects/building-digital-capability">https://www.jisc.ac.uk/rd/projects/building-digital-capability</a>
<b>Formal, informal &amp; non-formal learning</b>	<i>Formal</i> is the learning that occurs in an organised and structured environment (in an education or training institution or on the job) and is explicitly designated as learning (in terms of objectives, time or resources).

	<p>Formal learning is intentional from the learner's point of view. It typically leads to validation and certification.</p> <p><i>Informal</i> is the learning resulting from daily activities related to work, family or leisure. It is not organised or structured in terms of objectives, time or learning support. Informal learning is in most cases unintentional from the learner's perspective. Informal learning outcomes do not usually lead to certification but may be validated and certified in the framework of recognition of prior learning schemes. Informal learning is also referred to as experiential or incidental/random learning.</p> <p><i>Non-formal</i> is the learning which is embedded in planned activities not explicitly designated as learning (in terms of learning objectives, learning time or learning support). Non-formal learning is intentional from the learner's point of view. Non-formal learning outcomes may be validated and lead to certification. Non-formal learning is sometimes described as semi-structured learning.</p> <p>Source: Cedefop  <a href="http://www.cedefop.europa.eu/en/publications-and-resources/publications/4106">http://www.cedefop.europa.eu/en/publications-and-resources/publications/4106</a></p>
<b>Governance</b>	<p>Concerns the structures, functions, processes, and organizational traditions that have been put in place to ensure that the organization is run in such a way that it achieves its objectives in an effective and transparent manner. It is the framework of accountability to users, stakeholders and the wider community.</p> <p>Adapted from World Bank:  <a href="http://siteresources.worldbank.org/EXTGLOREGPARP/ROG/Resources/g_rpp_sourcebook_chap12.pdf">http://siteresources.worldbank.org/EXTGLOREGPARP/ROG/Resources/g_rpp_sourcebook_chap12.pdf</a></p>
<b>ICT</b>	See: digital technologies
<b>Informal learning</b>	See: Formal, non-formal and informal learning

<p><b>Innovation, Education innovation</b></p>	<p>Innovation involves making changes in something established, especially by introducing new methods, ideas, or products. Source: Oxford English Dictionary</p>
<p><b>Management</b></p>	<p>Concerns day-to-day operations within the context of the strategies, policies, processes, and procedures that have been established by the governing body. Whereas governance is concerned with “doing the right thing,” management is concerned with “doing things right.” Adapted from World Bank: <a href="http://siteresources.worldbank.org/EXTGLOREGPARP/ROG/Resources/g_rpp_sourcebook_chap12.pdf">http://siteresources.worldbank.org/EXTGLOREGPARP/ROG/Resources/g_rpp_sourcebook_chap12.pdf</a></p>
<p><b>Non-formal learning</b></p>	<p>See: Formal, non-formal and informal learning</p>
<p><b>Open Education</b></p>	<p>The term ‘Open Education’ has several interpretations. Openness can refer to widening access to educational opportunities and educational resources (particularly for under-represented, disadvantaged, or marginalized groups). Increasing flexibility in terms of the time, place and pace of study is also a defining characteristic of openness, aligned with ambitions to provide more personalized/individualized curricula and study options (including flexible, online education and/or more personalized / open/ customized learning support for students through use of learning analytics).</p>
<p><b>Open Educational Resources</b></p>	<p>Teaching, learning and research materials in any medium, digital or otherwise, that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions. Source: UNESCO definition <a href="http://www.unesco.org/new/en/communication-and-information/access-to-knowledge/open-educational-resources/what-are-open-educational-resources-oers/">http://www.unesco.org/new/en/communication-and-information/access-to-knowledge/open-educational-resources/what-are-open-educational-resources-oers/</a></p>

<b>Opening up education</b>	<p>A Communication of the European Commission setting out a policy for “stimulating high-quality, innovative ways of learning and teaching through new technologies and digital content”.</p> <p><a href="http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52013DC0654&amp;format=EN">http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52013DC0654&amp;format=EN</a></p>
<b>Peer-assessment</b>	<p>Peer-assessment allows instructors to share the evaluation of assignments with their students. It is grounded in theories of <u>active learning</u> (Piaget, '71), adult learning (Cross, '81) and social constructionism (Vygotsky, '62).</p> <p>Source: Cornell University Centre for Teaching Excellence</p> <p><a href="http://www.cte.cornell.edu/">http://www.cte.cornell.edu/</a></p>
<b>Performance Indicators</b>	<p>Performance indicator refers to the means by which an objective can be judged to have been achieved or not achieved. Indicators are therefore tied to goals and objectives and serve simply as ‘yardsticks’ by which to measure the degree of success in goal achievement. Performance indicators are quantitative tools and are usually expressed as a rate, ratio or percentage.</p> <p>Source: EQAVET, <a href="http://www.eqavet.eu">http://www.eqavet.eu</a></p>
<b>Self-assessment</b>	<p><i>Self-assessment</i> involves the ability to be a realistic judge of one’s own performance.</p> <p>Proponent of self-assessment suggest many advantages including that it:</p> <ul style="list-style-type: none"> <li>• Provides timely and effective feedback and allows for quick assessment of student learning.</li> <li>• Allows instructors to understand and provide quick feedback on learning.</li> <li>• Promotes academic integrity through student self-reporting of learning progress.</li> <li>• Promotes the skills of reflective practice and self-monitoring.</li> <li>• Develops self-directed learning.</li> <li>• Increases student motivation.</li> <li>• Improves satisfaction from participating in a</li> </ul>

	<p>collaborative learning environment.</p> <ul style="list-style-type: none"> <li>• Helps students develop a range of personal, transferrable skills to meet the expectations of future employers.</li> </ul> <p>Source: Cornell University Centre for Teaching Excellence <a href="http://www.cte.cornell.edu/">http://www.cte.cornell.edu/</a></p>
<b>Staff</b>	<p>Refers to staff in all categories, involved directly or indirectly in formal educational settings. Job titles include, ‘teacher’, ‘tutor’, ‘academic’, ‘lecturer’, ‘faculty’, ‘trainer’, ‘mentor’, ‘coach’ and also include support roles such as ‘librarian’, ‘ICT support’, ‘eLearning support’ and those in management/leadership roles, ‘principals’, ‘rectors’.</p>
<b>Students</b>	<p>Refers to persons of any age who are engaged in a <i>formal</i> educational process (course or programme). Students are often referred to as ‘learners’, although this term is potentially broader, as it can refer to learning in both formal and informal settings.</p>
<b>Teacher</b>	<p>The generic term ‘teacher’ is intended to cover all educational sectors. Sectors, other than primary and secondary schools, may identify this role as ‘tutor’, ‘instructor’, ‘lecturer’, or professor.</p>