

Operationalisation of DigComp's resources for VET providers and LLL professionals

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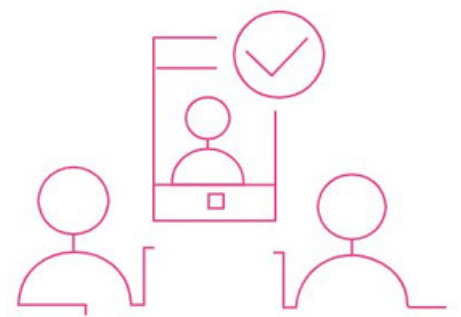


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Abstract

This brief document is intended to support readers in better navigating the ecosystem of DigComp, the official EU training and education framework for digital competences. The aim is to provide for solid, robust and reliable coordinates to which users can rely on to understand what might be practical and operational use of DigComp and related spin-off resources.

Nearly 20 years ago, digital competences have been identified by the European Council as key competence for lifelong learning: pivotal set of skills, attitudes and knowledge for all EU citizens to sustain the social, technological and economic development of EU societies. Throughout the years, in order to facilitate even further the acquisition from citizens and societies of such competences, EU institutions provided for official training and education frameworks conceived to operationalise standard training and education curricula based on that competences, and further break-down including specific training areas of interest, sub-competences and multi-level progression models to track down, assess and monitor the performance of learners.

The development of these training and education frameworks result in the effort to consolidate at EU level a common approach to education and training, concise and comprehensive enough to be transferred at transnational level, and within different ecosystem of practice.

As of today, DigComp represent the common approach promoted by EU institution to education and training in the field of digital competences, whereas digital competence is identified as: [...] the confident, critical and responsible use of, and engagement with, digital technologies for learning, at work, and for participation in society [...] information and data literacy, communication and collaboration, media literacy, digital content creation (including programming), safety (including digital well-being and competences related to cybersecurity), intellectual property related questions, problem solving and critical thinking[1]

[1] Key competences for lifelong learning, Directorate-General for Education, Youth, Sport and Culture (European Commission), 2019

The three-dimension impact of DigComp

Although being formally conceived and widely known as the official training and education framework on digital competences for EU citizens, the extended bibliography of DigComp addresses also two other dimensions that are instrumental to reach the level of “public digital awareness” expected by EU institutions:

- upskilling opportunities for teachers and educators
- digitalisation and digital readiness at large of training and education organisation

A comprehensive understanding of the potential benefits that lies beyond the operational embedment of DigComp within teaching and education practices cannot exclude none of the three impact dimensions involved.

The assessment of DigComp, and the design of an internal organisational approach for compliance, better position training and education organisation to: a) deliver high-quality digital education, sustaining the acquisition from learners of those learning outcomes recognised as fundamental for a comprehensive and systemic digital education; b) support new capacity building opportunities targeted at teachers and educators, coherently with the strategic priority to nurture their qualification, readiness and effectiveness in intercepting and addressing the ever-changing needs of their cohort of reference;

c) strengthen and boost the digital transition as a whole of education and training organisation, by consolidating and investing in new resources for IT readiness both from a perspective of human capital, infrastructures and organisational planning.

DigComp's ecosystem tackles each of the three aforementioned impact's dimensions through fine-tuned DigComp spin-offs. From the perspective of the training provider:

- DigComp 2.2 (last available version dated 2022) provides for clear references on what should be the training areas of interest and related competences of any general education and training plan on digital competences addressed to any given cohort of learners, meaning which digital skills, attitudes and knowledge EU institutions expected from EU citizens to be empowered on.
- DigCompEDU provides for clear references on which digital competences are expected from teachers and educators, so as to better equip them with new skills, attitudes and knowledge instrumental for the roll-out and provision of a digital learning experience for learners.
- DigCompORG provides for a very detailed and comprehensive checklist of indicators and parameters to which education and training providers can look into to self-assess the level of digital penetration within their institution, and to evaluate further areas of intervention to boost even further their level of digitalisation at organisational level.

Each of these three frameworks has a specific focus, its own distinctive scale and scope, its own structure and design. The operationalisation of DigComp 2.2 addresses the digital training and education needs of learners, generating a positive impact at level of cohort of reference; the operationalisation of DigCompEDU addresses the digital training and education needs of teachers and trainers themselves, generating a positive impact at level of providers and offer; the operationalisation of DigCompORG addresses the opportunities for digitalisation and digital readiness of training and education organisations, generating a positive impact at level of organisational change and digital development of the ecosystem as a whole.

Operationalisation of DigComp 2.2: empowering learners' digital competences

By operationalisation of DigComp 2.2, we refer to the opportunity of re-structuring and re-designing the digital education and training offer of (VET) organisations based on the very training curricula already provided by the framework, so as to intercept and valorise for learners those learning outcomes that are foreseen as instrumental to strengthen learners' digital competences.

Training and education organisation can either transfer the education model of DigComp within their offer as a whole, or take inspiration and expand from it to develop their own curricula: what is relevant is the consistency of the learning outcomes guaranteed by their offer with the ones highlighted by the framework.

This system of compliance gives trainers and learners in turn robust references for capacity building in the field of digital literacy.

Table 1: Training areas and related competences

Training area	Competences
1. Information and data literacy	1.1 Browsing, searching and filtering data, information and digital content 1.2 Evaluating data, information and digital content 1.3 Managing data, information and digital content
2. Communication and collaboration	2.1 Interacting through digital technologies 2.2 Sharing through digital technologies 2.3 Engaging in citizenship through digital technologies 2.4 Collaborating through digital technologies 2.5 Netiquette 2.6 Managing digital identity
3. Digital content creation	3.1 Developing digital content 3.2 Integrating and re-elaborating digital content 3.3 Copyright and licenses 3.4 Programming
4. Safety	4.1 Protecting devices 4.2 Protecting personal data and privacy 4.3 Protecting health and well-being 4.4 Protecting the environment
5. Problem Solving	5.1 Solving technical problems 5.2 Identifying needs and technological responses 5.3 Creatively using digital technologies 5.4 Identifying digital competence gaps

Source: DigComp 2.2, 2022

Users of DigComp 2.2 have available as well:

1. An 8 layer-proficiency model, used by trainers to assess and evaluate the general level of digital literacy of learners even before the roll-out of the education programme and / or their progress and performance throughout the teaching cycle.

The structure of the progression model is inspired by the official European Qualification Framework (EQF), which represents the standard EU learning outcomes-based framework to clarify what a person knows, understand and is able to do.

The progression model applies to each of the competences identified in Table 1, with specific distinctions per each of the 8 layers.

In general, the transition from a layer to the other is function of three variables:

- complexity of the task that the person can perform associated to the given competence
- autonomy of the learners in accomplishing that task
- cognitive domain related to the activity

Table 2: Generic progression model

Proficiency level	Complexity of tasks	Autonomy	Cognitive domain
Level 1	Simple task	With guidance	Remembering
Level 2	Simple Task	Autonomy and with guidance where needed	Remembering
Level 3	Well-defined and routine tasks, straightforward problems	On my own	Understanding
Level 4	Tasks, and well-defined and non-routine problems	Independent and according to my needs	Understanding
Level 5	Different tasks and problems	Guiding others	Applying
Level 6	Most appropriate tasks	Able to adapt to others in a complex context	Evaluating
Level 7	Resolve complex problems with limited solutions	Integrate to contribute to the professional practice and to guide others	Creating
Level 8	Resolve complex problems with many interacting factors	Propose new ideas and processes to the field	Creating

Source: DigComp 2.2, 2022

2. A renewed set of skills, attitudes and knowledge diversified per knowledge and level that comes with the transition of learners from a layer of dimension of proficiency to the next.

Based on a common proposed definition, a competence is break-down into three defining features:

- Knowledge, which refers to facts and figures, concepts, ideas and theories which are already established and support the understanding of a certain area or subject.
- Skill, which refers to the ability and capacity to carry out processes and use the existing knowledge to achieve results.
- Attitude, which refers to the disposition and mind-sets to act or react to ideas, persons or situations

In the specific case of digital competences, the implication is that:

- Knowledge identifies how digital technologies can support communication, creativity and innovation, and be aware of their opportunities, limitations, effects and risks. Understanding the general principles, mechanisms and logic underlying evolving digital technologies and know the basic function and use of different devices, software, and networks. Individuals should take a critical approach to the validity, reliability and impact of information and data made available by digital means and be aware of the legal and ethical principles involved in engaging with digital technologies.
- Skill identifies how individuals should be able to use digital technologies to support their active citizenship and social inclusion, collaboration with others, and creativity towards personal, social or commercial goals. Skills include the ability to use, access, filter, evaluate, create, program and share digital content. Individuals should be able to

manage and protect information, content, data, and digital identities, as well as recognise and effectively engage with software, devices, artificial intelligence or robots.

- Attitudes identifies an ethical, safe and responsible approach to the use of these tools. Engagement with digital technologies and content requires a reflective and critical, yet curious, open-minded and forward-looking attitude to their evolution. It also requires.

The 2.2 version of DigComp comes with 250 examples of knowledge, skills and attitudes in support of citizens and learners to engage confidentially with common and advanced technology.

3. A cluster of fictional scenarios, both in employment and learning settings, in which these competences might manifest their practical use.

To this extent, users are recommended to look into two other official spin-offs of the DigComp framework published two years apart from each other.

DigComp into Action - a list of 38 initiatives and projects recognised by the Joint Research Centre of the European Commission as official good practices in operationalisation of DigComp within education and training settings. Users can look into DigComp into Action to gather and collect ideas, food for thought and general sources of inspiration to come up with their own DigComp into Action initiative, and generally speaking, to get a better sense on what are the potentials of implementation.

DigComp at Work - a list of 9 initiatives and project recognised by the Joint Research Centre of the European Commission as official good practices in operationalisation of DigComp within employability and employment settings. Users can look into DigComp at Work to gather and collect ideas, food for thought and general sources of inspiration to come up with their own DigComp at Work initiative, and generally speaking, to get a better sense on what are the potentials of implementation beyond the scale and scope of education.

Operationalisation of DigCompEDU: empowering trainers' digital competences

By operationalisation of DigCompEDU, we refer to the opportunity of re-structuring and re-designing the digital education and training offer for trainers themselves, so as to equip them with new and innovative skills, knowledge and attitudes for digital education and digital teaching.

Training and education organisation can either transfer the education model of DigCompEDU within their train-the-trainer initiatives as a whole, or take inspiration and expand from it to develop their own upskilling and capacity building programme: what is relevant is the consistency of the learning outcomes guaranteed by their offer with the ones highlighted by the framework.

The ratio of this framework remains the same: although it is most definitely true that nothing prevents DigComp 2.2 from being implemented as the learning outcomes-based reference for professionalization programme aimed at trainers, DigCompEDU takes the discussion up a notch with the highlight and valorisation of a whole brand new set of training areas, competences and learning outcomes strategically designed and conceived for digital teachers in the making.

Compared to the traditional DigComp 2.2, in which we have only two scales of exploitation represented by training areas and competences, in DigCompEDU there is an additional structural layer represented by the scale of the given competence and the pedagogical dimension in which it operates, and to help trainers in being more digitally-competent:

- Competences for the general upskilling of professionals and educators
- Competences for the development of new digital approaches to education
- Competences for the transferring of digital competences to learners

More specifically, we have:

Table 3: break-down of DigCompEDU

Educators' professional competences	Area 1 Professional engagement	<ul style="list-style-type: none"> • Organizational communication • Professional collaboration • Reflective practice • Digital CPD
Educators' pedagogic competences	Area 2 Digital Resources	<ul style="list-style-type: none"> • Selecting • Creating and modifying • Managing protecting and sharing.
	Area 3 Teaching and learning	<ul style="list-style-type: none"> • Teaching • Guidance • Collaborative learning • Self-regulated learning
	Area 4 Assessment	<ul style="list-style-type: none"> • Assessment strategies • Analysing evidences • Feedback and planning
	Area 5 Empowering learners	<ul style="list-style-type: none"> • Accessibility and inclusion • Differentiation and personalization • Actively engaging learners
Learners' competences	Area 6 Facilitating learners	<ul style="list-style-type: none"> • Information and media literacy • Communication • Content creation • Responsible use • Problem solving

Source: DigCompEDU, 2017

Each competence comes with its own set of:

- **Descriptor**, an intuitive and concise description aimed at facilitating readers' quick understanding of what they are dealing with
- **Activities**, concrete examples of how this competence applies illustrating its overall (but not exhaustive, only exemplificative) scale and scope
- **Digital technologies**, IT resources (software, hardware and content) that come in support of educators and teachers as a concrete means through which they can apply and put at work that competence
- **Progression**, a brief statement of how the given competence finds implementation at difference proficiency layers
- **Proficiency statement**, a cluster of examples and more or less typical scenarios providing for common activities and task that the learner-trainer should be able to perform after certain progressions

Although the ratio remains the same, the progression model of DigCompEDU is considerably different from the one of DigComp 2.2. For a comprehensive snapshot on the proficiency statement that applies to each progression level of each competence, readers are recommended to look into the official publication. As we did in Table 2, we will provide readers with the general framework of progression[1] setting the distinctive features and indicators between one proficiency level and the other:

Newcomer (A1):

Newcomers are aware of the potential of digital technologies for enhancing pedagogical and professional practice. However, they have had very little contact with digital technologies and use them mainly for lesson preparation, administration or organisational communication. Newcomers need guidance and encouragement to expand their repertoire and to apply their existing digital competence in the pedagogical realm.

Expert (B2):

Experts use a range of digital technologies confidently, creatively and critically to enhance their professional activities. They purposefully select digital technologies for particular situations, and try to understand the benefits and drawbacks of different digital strategies. They are curious and open to new ideas, knowing that there are many things they have not tried out yet. They use experimentation as a means of expanding, structuring and consolidating their repertoire of strategies. Experts are the backbone of any educational organisation when it comes to innovating practice.

Explorer (A2):

Explorers are aware of the potential of digital technologies and are interested in exploring them to enhance pedagogical and professional practice. They have started using digital technologies in some areas of digital competence, without, however, following a comprehensive or consistent approach. Explorers need encouragement, insight and inspiration, e.g. through the example and guidance of colleagues, embedded in a collaborative exchange of practices.

Leader (C1):

Leaders have a consistent and comprehensive approach to using digital technologies to enhance pedagogic and professional practices. They rely on a broad repertoire of digital strategies from which they know how to choose the most appropriate for any given situation. They continuously reflect on and further develop their practices. Exchanging with peers, they keep updated on new developments and ideas. They are a source of inspiration for others, to whom they pass on their expertise.

Integrator (B1):

Integrators experiment with digital technologies in a variety of contexts and for a range of purposes, integrating them into many of their practices. They creatively use them to enhance diverse aspects of their professional engagement. They are eager to expand their repertoire of practices. They are, however, still working on understanding which tools work best in which situations and on fitting digital technologies to pedagogic strategies and methods. Integrators just need some more time for experimentation and reflection, complemented by collaborative encouragement and knowledge exchange to become Experts.

Expert (B2):

Experts use a range of digital technologies confidently, creatively and critically to enhance their professional activities. They purposefully select digital technologies for particular situations, and try to understand the benefits and drawbacks of different digital strategies. They are curious and open to new ideas, knowing that there are many things they have not tried out yet. They use experimentation as a means of expanding, structuring and consolidating their repertoire of strategies. Experts are the backbone of any educational organisation when it comes to innovating practice.

Leader (C1):

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Pioneer (C2):

Pioneers question the adequacy of contemporary digital and pedagogical practices, of which they themselves are Leaders. They are concerned about the constraints or drawbacks of these practices and driven by the impulse to innovate education even further. Pioneers experiment with highly innovative and complex digital technologies and/ or develop novel pedagogical approaches. Pioneers are a unique and rare species. They lead innovation and are a role model for younger teachers.

Operationalisation of DigCompORG: strengthening IT-readiness of organisations

By operationalisation of DigCompORG, we refer to the opportunity for education and training organisation to self-assess their level of digital penetration, and how fast they are approaching to digital transition.

DigCompORG provides for a list of 74 descriptors giving measure of the process leading education and training organisation in integrating and engaging with systemically digital learning practices and approaches.

These descriptors can be conceived as sort of benchmarks parameters to which organisations and institutions – of every order and degree – can refer to monitor and measure their level of digitalisation.

As we can see from this very brief description, with DigCompORG with step into a different spectrum of discussion: so far, with DigComp 2.2 and DigCompEDU we considered the human factor associated to digital education and training (first for learners, then for trainers), the switch of the focus on DigCompORG implies an institution-centred analysis structured starting from the planning and processing of organisational changes.

DigCompORG is of use specifically for teachers and educators that are involved in managerial roles, and invested of decision-making power. Of course, the human factor element is not excluded from the discussion, but in this case it is observed from a different angle which assumes as starting point a top-down strategy for the valorisation of trainers' competences, and in turn, the relevance, impact and sustainability of the educational offer. Personal responsibilities and bottom-up drives are transversal to many of the thematic elements and fall under them as triggers of change and development.

Synergistically with DigComp 2.2 and DigCompEDU, the operationalisation of DigCompORG ease the ascent of a comprehensive organisational mission oriented towards innovation, human capital development and digital readiness, sustaining at the same time the achievement of multiple strategic priorities of pedagogical, technological and organisational inspiration.

DigCompORG is for organisations that wish to make of effective integration and embedment of digital technologies one of their core objectives for education of higher quality and more responsive to the ever-changing needs of evolving societies.

Each of the seven thematic elements address a different dimension of the complex and sophisticated process that lead organisations towards digital transition and should be conceived through a MECE leans of interpretation (Mutually Exclusive, Collectively Exhaustive).

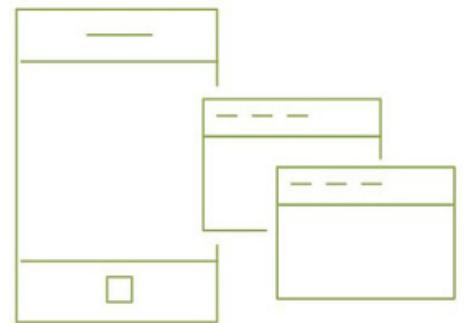
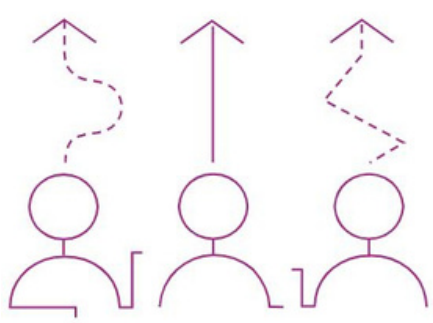
Here below we introduce readers to a comprehensive overview of all thematic elements, sub-elements and descriptors available.

Thematic element	Sub-element	Descriptors	
Leadership & governance practices	Part of the mission, vision & strategy	1. The potential of digital learning technologies is clearly flagged	
		2. The benefits of digital learning technologies are communicated	
		3. The strategic plan encompasses digital-age learning	
		4. Open education is an aspect of public engagement	
	Supported by an implementation plan	5. Planning builds on enablers while addressing barriers	
		6. Internal stakeholders have a degree of autonomy	
		7. Opportunities, incentives and rewards for staff are identified	
		8. Digital-age learning is aligned with broader priorities	
		9. There are twin goals of modernising existing educational provision and offering new opportunities	
	Management & governance model	10. There is a shared understanding of and commitment to the implementation plan	
		11. Management responsibility is clearly assigned	
		12. Resources are aligned with budgets and staffing	
		13. The outcomes, quality and impact of the implementation plan are reviewed	
		14. Specific initiatives or pilots are evaluated	
		15. Implementation status is benchmarked	
		16. Oversight of policy and direction is evident	
Teaching & learning practices		Digital competence of staff and students	17. Staff and students are Digitally-Competent
			18. Safety, risks and responsible behaviour in online environments are foregrounded
	19. The Digital Competence (DC) of staff and students is benchmarked		
	20. DC is included in staff appraisal		
	Rethinking roles & pedagogical approaches	21. Staff are partners in change	
		22. New roles are envisaged for staff	
		23. New roles are envisaged for students	
		24. Pedagogical approaches are expanded	
		25. Personalised learning is developed	
		26. Creativity is promoted	
		27. Collaboration and group work is expected	
		28. Social and emotional skills are developed	

Professional development	/	29. A commitment to Continuous Professional Development (CPD) is evident
		30. CPD is provided for staff at all levels
		31. CPD is aligned with individual and organisational needs
		32. A wide range of CPD approaches is evident
		33. Accredited/certified CPD opportunities are promoted
Assessment practices	Engaging assessment formats	34. The scope of formative assessment is extended
		35. Summative assessment is diversified
		36. Self- and peer-assessment are promoted
		37. Rich, personalised and meaningful feedback is encouraged and expected
	Recognition of inf. & non-formal learning	38. Prior, experiential and open learning are recognised and accredited
	Learning design informed by analytics	39. Learning analytics is given strategic consideration
		40. A code of practice for learning analytics is in place
		41. Learning is supported through learning analytics
		42. Quality management and curriculum/programme design are supported through learning analytics
		43. Staff and students are the creators of contents
44. Content repositories are widely and effectively used		
Content and curricula	Digital content & OER are promoted	45. Intellectual property and copyright are respected
		46. Digital tools and contents are licensed as required
		47. Open Educational Resources are promoted and used
		48. Subject-based learning is reimagined to create more integrated approaches
		Curricula are redesigned / re-interpreted

		49. The time and place of learning is rescheduled
		50. Online provision is a reality
		51. Learning in authentic contexts is promoted
		52. Digital learning provision is evident across curriculum areas
		53. Students' digital competence is developed across the curriculum
Collaboration & Networking	Networking & sharing is promoted	54. Networked collaboration for staff to pool expertise and share contents is the norm
		55. Knowledge exchange efforts are recognised
		56. Students engage in effective networking
		57. Participation in knowledge-exchange activities and events is promoted
		58. Internal collaboration and knowledge exchange is expected
	Strategic approach to communication	59. An explicit communication strategy is in place
	60. A dynamic online presence is evident	
	Partnerships are developed	61. A commitment to knowledge exchange through partnerships is evident
		62. Staff and students are incentivised to be actively involved in partnerships
Infrastructure	Physical & virtual learning spaces	63. Physical learning spaces optimise the affordances of digital-age learning
		64. Virtual Learning Spaces are optimised
	Digital infrastructure	65. An Acceptable Usage Policy is in place
		66. Pedagogical and technical expertise direct investments in digital technologies
		67. A range of digital learning technologies supports anytime/anyplace learning
		68. Bring Your Own Device (BYOD) approaches are supported
		69. Risks relating to inequality and digital inclusion are addressed
		70. Technical and user support is evident
		71. Assistive technologies address special needs
		72. Measures to protect privacy, confidentiality and safety are well established
		73. Effective procurement planning is evident
		74. An operational plan for core ICT backbone and services is in place

Source: DigCompORG, 2015



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