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IO1: Task 3 "Compilation of gaps and needs analysis in relation to DiGiCompEdu and definition of overall learning objectives "

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Introduction

This document reflects the outcome of Task 3 “Compilation needs and gaps analysis in relation to DiGiCompEdu and definition of overall learning objectives corresponding to Intellectual Output 1 of the project, “Curriculum and Open Resource Toolbox”.

At first, partners were provided with a template for the theoretical framework. Each partner had to submit a report on the gaps and needs analysis realized in their countries prior to the project approval. Then, followed the integration of national reports into one comprehensive document, juxtaposing the needs and gaps to the DigiCompEdu framework. This comparison resulted in the specific description of needs to be addressed through the DIGITA project and the overall learning objectives.

It was prepared by Olympic Training and Consultant, Caminos and Chamber of Commerce of Terni on the basis of the summary of national reports on gaps and needs analysis per country.

Definition of concepts

A learning objective is a description of what the adult educator must be able to do upon completion of an educational activity. A well-written learning objective outlines the knowledge, skills and/or attitude the educator will gain from the educational activity and does so in a measurable way.

The domains of learning can be categorized as affective (attitude), psychomotor (skills), and cognitive (knowledge) (ASK).

- **A**ttitude — Changes how an adult educator *chooses* to act.
- **S**kills —This domain focuses on changing or improving the tasks the adult educator can perform.
- **K**nowledge — This domain focuses on increasing what adult educators know.

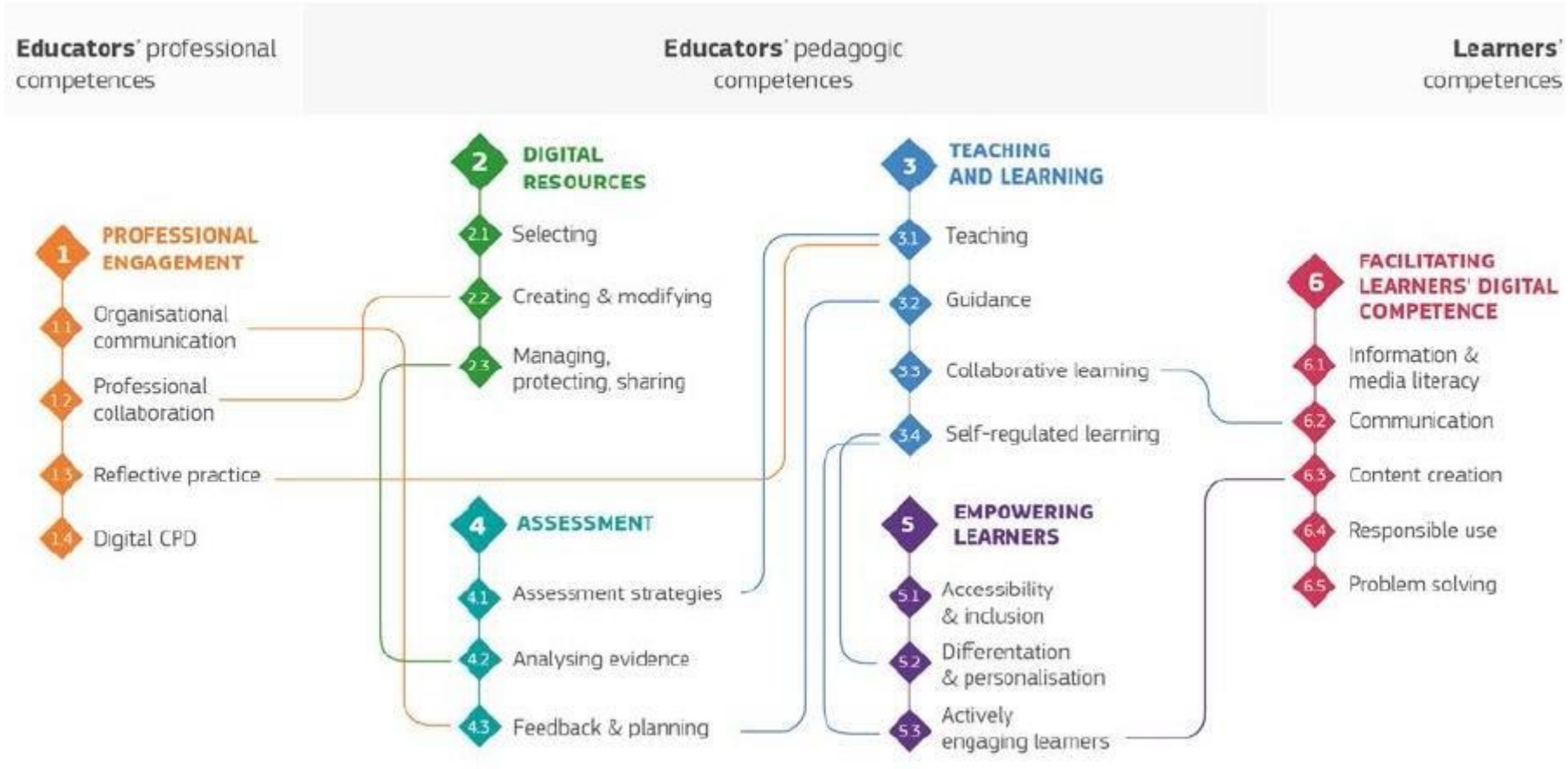

Figure 1 - DigiCompEdu FrameworkCompetences and their Connections

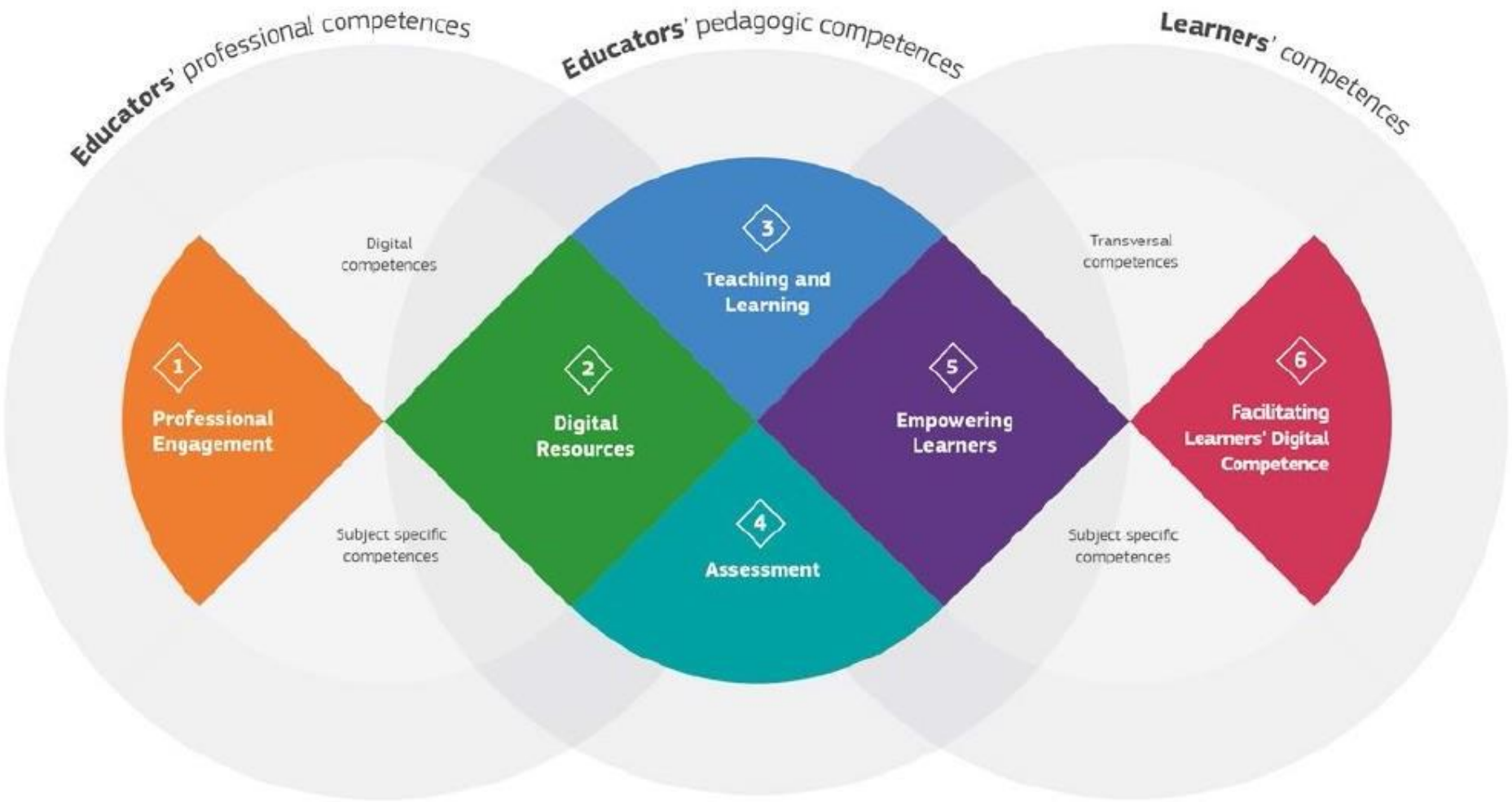

Figure 2 - Synthesis of the DigiCompEdu Framework

01. Professional Engagement

Educators' digital competence is expressed in their ability to use digital technologies not only to enhance teaching, but also for their professional interactions with colleagues, learners, parents and other interested parties, for their individual professional development and for the collective good and continuous innovation in the organisation and the teaching profession.

Table 1 - Professional Engagement: Needs and Gaps

01. PROFESSIONAL ENGAGEMENT	NEEDS	GAPS
- *Organisational communication* - *Professional Collaboration* - *Reflective Practice* - *Digital CPD*	- *Mapping teachers' digital skills so that the skills can be developed* - *Creation of a common, multifunctional channel which would help adult educators from various fields to know at first hand the potential and the benefits that occur from the familiarization and the use of DigCompEdu* - *Professional progress for educators, enhance digital skills, to progress, familiarize with international trends in digital competences frameworks* - *Communication for process development (more quickly, efficiently and comfortably)* - *Communication of tools with their implementation instructions, implementation policies, good practices and success stories between professionals as well.*	- *Digital continuous development is growing as news ways of communicating arise* - *Bigger the difference in age, bigger the gap in the collaboration level*

02. Digital Resources

Educators are currently confronted with a wealth of digital (educational) resources they can use for teaching. One of the key competences any educator needs to develop is to come to terms with this variety, to effectively identify resources that best fit their learning objectives, learner group and teaching style, to structure the wealth of materials, establish connections and to modify, add on to and develop themselves digital resources to support their teaching.

At the same time they need to be aware of how to responsibly use and manage digital content. They must respect copyright rules when using, modifying and sharing resources, and protect sensitive content and data, such as digital exams or students' grades.

Table2 - Digital Resources: Needs and Gaps

02. DIGITAL RESOURCES	NEEDS	GAPS
- *Selecting* - *Creating & modifying* - *Managing, protecting sharing*	- *Continuous need for professional development (creation, identifying, manipulating) digital resources* - *Digital repository that could provide tools and applications horizontal and vertical* - *Online classes* - *List of tools and applications useful in the classroom* - *Big guide or catalogue specific depending on the use and objectives, you explain main utilities and form of using each*	- *Digital intellectual property and digital equal access* - *Data security (lack of knowledge of personal data protection procedures on line training)*

03. Teaching and Learning

Digital technologies can enhance and improve teaching and learning strategies in many different ways. However, whatever pedagogic strategy or approach is chosen, the educator's specific digital competence lies in effectively orchestrating the use of digital technologies in the different phases and settings of the learning process. The fundamental competence in this area – and maybe of the whole framework - is 3.1: Teaching. This competence refers to designing, planning and implementing the use of digital technologies in the different stages of the learning process. Competences 3.2 to 3.4 complement this competence by emphasizing that the real potential of digital technologies lies in shifting the focus of the teaching process from teacher-led to learner-centred processes. Thus the role of a digitally-competent educator is to be a mentor and guide for learners in their progressively more autonomous learning endeavours. In this sense, digitally-competent educators need to be able to design new ways, supported by digital technologies, to provide guidance and support to learners, individually and collectively (3.2) and to initiate, support and monitor both self-regulated (3.4) and collaborative (3.3) learning activities.

Table 3 – Teaching and Learning: Needs and Gaps

03. TEACHING AND LEARNING	NEEDS	GAPS
Teaching *Guidance* *Collaborative learning* *Self-regulated learning*	- *Information systems that allow the availability of data (useful for the analysis and programming of interventions)* - *Pedagogical methodologies and strategies in including ICT during teaching. Pedagogical resources based on ICTs* - *Digital technologies for learner-centred teaching and learning strategies* - *Reform (further than substituting traditional means and methods) the educational and learning experiences* - *Teaching formats where the implementation of digital tools really accelerates the educational*	- *Roadmap that will help to comprehend all the different paths that can be explored when engaging ICT in teaching to fulfil their teaching needs* - *Evolve as professionals starting at an entry level regarding their digital skills and evolving at a very advanced level*

03. TEACHING AND LEARNING	NEEDS	GAPS
	process, reducing the workload, and being intuitive enough to teach how it works and apply them successfully in a minimum time - *Guidelines for teachers to lead their classes, work protocols about proceeding in a digital atmosphere*	

04. Assessment

Assessment can be a facilitator or bottleneck to innovation in education. When integrating digital technologies into learning and teaching, we must consider how digital technologies can enhance existing assessment strategies. At the same time, we must also consider how they can be used to create or to facilitate innovative assessment approaches. Digitally-competent educators should be able to use digital technologies within assessment with those two objectives in mind. Furthermore, the use of digital technologies in education, whether for assessment, learning, administrative or other purposes, results in a wide range of data being available on each individual learner's learning behaviour. Analysing and interpreting this data and using it to help make decisions is becoming more and more important – complemented by the analysis of conventional evidence on learner behaviour. At the same time, digital technologies can contribute to directly monitoring learner progress, to facilitating feedback and to allowing educators to assess and adapt their teaching strategies.

Table 4 – Assessment: Needs and Gaps

04. ASSESSMENT	NEEDS	GAPS

- *Assessment strategies* - *Analysis evidence* - *Feedback and planning*	- *Most of the educators that have developed abilities in the creation of digitized learning materials, prefer to use a digital assessment system for the abilities, as it can be delivered remotely rapidly and anonymously*	

05. Empowering Learners

One of the key strengths of digital technologies in education is their potential for supporting learner-centred pedagogicstrategies and boosting the active involvement of learners in the learning process and their ownership of it. Thus, digitaltechnologies can be used to facilitate learners' active engagement, e.g. when exploring a topic, experimenting withdifferent options or solutions, understanding connections, coming up with creative solutions or creating an artefact andreflecting on it.

Digital technologies can furthermore contribute to supporting classroom differentiation and personalised education byoffering learning activities adapted to each individual learner's level of competence, interests and learning needs. At thesame time, however, care must be taken not to exacerbate existing inequalities (e.g. in access to digital technologies ordigital skills) and to ensure accessibility for all learners, including those with special educational needs.

Table5–Empowering Learners: Needs and Gaps

05. EMPOWERING LEARNERS	NEEDS	GAPS
- *Accessibility and inclusion* - *Differentiation and personalisation* - *Actively engaging learners*	- *Social media in order to make teaching more attractive* - *New technologies to be used in the teaching process such as cloud and augmented reality* - *Personalisation of tools and applications* - *The personalization area for digitized courses is quite reduced as it is recognized that a personalized course, based on the differentiated need of learners doubles the content needed and also involves a differentiation system that increases the price of the course* - *As smartphones and computers are the most common digitized content creator tool known to learners, most of the challenges are directed towards making content on these tools* - *Tools for gamification at all levels, that allows greater inclusion and motivation, improving the*	- *Preparation of physical and virtual environments*

05. EMPOWERING LEARNERS	NEEDS	GAPS
	evaluation of knowledge and participation and inclusion. - *Accessibility and inclusion*	

06. Facilitating Learners' Digital Competence

Digital competence is one of the transversal competences educators need to instil in learners. Whereas fostering other transversal competences is only part of educators' digital competence in as far as digital technologies are used to do so, the ability to facilitate learners' digital competence isan integral part of educators' digital competence. Because of this, this ability merits a dedicated area in the DigCompEdu framework.

Learners' digital competence is captured by the European Digital Competence Framework for Citizens(DigComp). Thus, the DigCompEdu area follows the same logic and details five competences aligned in content and description with DigComp. The headlines, however, have been adapted to emphasize the pedagogical dimension and focus within this framework.

Table 6–Empowering Learners: Needs and Gaps

06. FACILITATING LEARNERS' DIGITAL COMPETENCE	NEEDS	GAPS
Information and media literacy *Digital communication and collaboration* *Digital content creation* *Responsible use* *Digital problem solving*	- *Free and Open Source software in teaching process, will help to develop students' critical thinking, changing teaching practice, learning process and communication.* - *Lack of knowledge on the integration of the digitized content into a unitary platform and every usage of creativity from the part of the learner involves an new (adapted) evaluation system from the part of the educator.*	- *Approach the very young to programming, computational thinking and problem solving*

Definition of overall learning objectives

Table7 - Professional Engagement: Learning Objectives

01. PROFESSIONAL ENGAGEMENT	NEEDS	GAPS DIFFERENCE BETWEEN CURRENT KNOWLEDGE, SKILLS, AND/OR PRACTICES AND THE DESIRED BEST PRACTICE	LEARNING OBJECTIVES
- *Organisational communication* - *Professional Collaboration* - *Reflective Practice* - *Digital Continuous Professional Development (CPD)*	- *Mapping teachers' digital skills so that the skills can be developed* - *Creation of a common, multifunctional channel which would help adult educators from various fields to know at first hand the potential and the benefits that occur from the familiarization and the use of DigCompEdu* - *Professional progress for educators, enhance digital skills, to progress, familiarize with international trends in digital competences frameworks* - *Communication for process development*	- *Digital continuous development is growing as news ways of communicating arise* - *Bigger the difference in age, bigger the gap in the collaboration level*	- *The participant will be able to list several digital technologies for organisational communication with learners, parents and third parties in order of complexity* - *The participant will be able to describe the usage of digital technologies in order to make additional learning resources and information available to learners (and parents).* - *The participant will be able to identify the suitable digital technologies in order to enhance organisational communication with learners, parents and third parties effectively* - *The participant will be able to distinguish the suitable digital technologies between learners, parents and third parties* - *The participant will be able to describe new communication strategies for learners, parents and third parties* - *The participant will be able to recognize the need to seek the help of others in improving his digital and pedagogical practice.* - ***The participant will be able to demonstrate every digital technology for organisational***

	(more quickly, efficiently and comfortably) - *Communication of tools with their implementation instructions, implementation policies, good practices and success stories between professionals as well.*		***communication to learners, parents and third parties*** - ***The participant will be able to demonstrate the communication of organisational procedures to learners and parents, e.g. rules, appointments, events by using digital technologies*** - ***The participant will be able to design new communication strategies for learners, parents and third parties*** - ***The participant will be able to develop educational resources collaboratively by using digital technologies*** - ***The participant will be able to developorganisational practices, policies and visions on the use of digital technologies*** - ***The participant will be able to evaluatenewpedagogical methods and strategies*** - ***The participant will be able to perform internet search for digital resources which support professional development*** - *The participant will be able to choose the appropriate digital technologies to communicate with third parties relevant to the educational project, e.g. experts to be invited, places to be visited.* - *The participant will be able to convince learners, parents and third parties to use digital technologies in order to enhance*

			organisational communicationon an individual basis, e.g. on progress and issues of concern. - *The participant will be able to recommend differentcommunication strategies for learners, parents and third parties* - *The participant will be able to collaborate with other educators, on a dedicated project or task using digital technologies* - *The participant will be able to endorse the exchange of knowledge, resources and experiences with colleagues and peers.* - *The participant will be able toevaluate his own digital and pedagogic practice* - *The participant will be able to collaborate and provide critical feedback on digital policies and practices* - *The participant will be able to evaluate the exchange in digital professional communities as a source of professionaldevelopment.*

Table8 - Digital Recourses: Learning Objectives

02. DIGITAL RESOURCES	NEEDS WHAT IS THE BEST PRACTICE	GAPS DIFFERENCE BETWEEN CURRENT KNOWLEDGE, SKILLS, AND/OR PRACTICES AND THE DESIRED BEST PRACTICE	LEARNING OBJECTIVES
Selecting Creating & modifying Managing, protecting sharing	- *Continuous need for professional development (creation, identifying, manipulating) digital resources* - *Digital repository that could provide tools and applications horizontal and vertical* - *Online classes* - *List of tools and applications useful in the classroom* - *Big guide or catalogue specific depending on the use and objectives, you explain main*	- *Digital intellectual property and digital equal access* - *Data security (lack of knowledge of personal data protection procedures on line training)*	- *The participant will be able to recall the most innovative technologies and tools linked to data security* - *The participant will be able to summarise the main concepts of data protection, intellectual property and cybersecurity basics* - *The participant will be able to improve ability to use the main applications for managing on line classes (also regarding the management of discussion and the sharing of documents)* - ***The participant will be able to take measure to protect sensitive data and resources*** - ***The participant will be able to recognize your student's current tech capabilities and their concerns*** - ***The participant will be able to formulate appropriate strategies to identify digital resources for teaching and learning, considering the specific learning context and learning objective*** - ***The participant will be able to respect possible restrictions to using, re-using and modifying the***

	utilities and form of using each tool		***digital resources*** - ***The participant will be able to share one's own repositories of resources with others, managing their access and rights appropriate*** - *The participant will be able to consider possible restrictions to the use or re-use digital resources (copyright, accessibility, technical requirements)* - *The participant will be able to jointly create with others digital educational resources* - *The participant will be enhance the knowledge on how to use the best application in order to reach to the objectives* - *The participant will be able to create a tech equity vision with your students*

Table9 - Teaching and Learning: Learning Objectives

03. TEACHING AND LEARNING	NEEDS	GAPS DIFFERENCE BETWEEN CURRENT KNOWLEDGE, SKILLS, AND/OR PRACTICES AND THE DESIRED BEST PRACTICE	LEARNING OBJECTIVES
- *Teaching* - *Guidance* - *Collaborative learning* - *Self-regulated learning*	- *Information systems that allow the availability of data (useful for the analysis and programming of interventions)* - *Pedagogical methodologies and strategies in including ICT during teaching. Pedagogical resources based on ICTs* - *Digital technologies for learner-centred teaching and learning strategies* - *Reform (further than substituting traditional means and methods) the educational and*	- *Roadmap that will help to comprehend all the different paths that can be explored when engaging ICT in teaching to fulfil their teaching needs* - *Evolve as professionals starting at an entry level regarding their digital skills and evolving at a very advanced level*	- *The participant will be able to identify how to use digital technologies and services to enhance the interaction with learners, individually and collectively* - *The participant will be able to recognize how to enable learners to use digital technologies as part of collaborative assignments* - *The participant will be able to identify how to use digital technologies to support learners' self-regulated learning* - ***The participant will be able to use classroom technologies to support instruction*** - ***The participant will be able to structure and manage content, collaboration and interaction in a digital environment*** - ***The participant will be able to manage and orchestrate digital teaching strategies*** - ***The participant will be able to use digital communication tools to respond to learner´s questions and doubts*** - ***The participant will be able to manage digital technologies to foster and enhance learner collaboration*** - ***The participant will be able to set up learning***

03. TEACHING AND LEARNING	NEEDS	GAPS DIFFERENCE BETWEEN CURRENT KNOWLEDGE, SKILLS, AND/OR PRACTICES AND THE DESIRED BEST PRACTICE	LEARNING OBJECTIVES
	learning experiences - *Teaching formats where the implementation of digital tools really accelerates the educational process, reducing the workload, and being intuitive enough to teach how it works and apply them successfully in a minimum time* - *Guidelines for teachers to lead their classes, work protocols about proceeding in a digital atmosphere*		***sessions, activities and interactions in a digital environment*** - ***The participant will be able to require learners to digitally present their collaborative efforts and assist them in doing so*** - ***The participant will be able to use digital technologies to allow learners to plan their own learning*** - *The participant will be able to reflect on the effectiveness and appropriateness of the digital pedagogical strategies and methods* - *The participant will be able to identify how to experiment with and develop new forms and formats for offering guidance and support*

Table10 - Assessment: Learning Objectives

04. ASSESSMENT	NEEDS	GAPS DIFFERENCE BETWEEN CURRENT KNOWLEDGE, SKILLS, AND/OR PRACTICES AND THE DESIRED BEST PRACTICE	LEARNING OBJECTIVES
- *Assessment strategies* - *Analysing evidence* - *Feedback and planning*	- *Abilities in the creation of digitized learning materials* - *Digital assessment system for the abilities, which can be delivered remotely rapidly and anonymously*		- *The participant will be able to define how to use digital technologies for formative and summative assessment* - *The participant will be able to explain to learners how to understand the evidence provided by digital technologies and how to use it for decision-making* - ***The participant will be able to use digital assessment tools to monitor the learning process and obtain information on learner´s progress*** - ***The participant will be able to use of a variety of digital and non-digital assessment formats*** - ***The participant will be able to use digital technologies to record, compare and synthesize data on learner progress*** - ***The participant will be able to manage digital evidence on learner activity, performance and progress, in order to inform teaching and learning*** - ***The participant will be able to use digital technologies to provide targeted and timely***

			feedback to learners - ***The participant will be able to design and implement learning activities which generate data on learner activity and performance*** - ***The participant will be able to adapt teaching strategies and provide targeted support, based on the evidence generated by the digital technologies used*** - *The participant will be aware of their benefits and drawbacks of digital and non-digital assessment formats* - *The participant will be able to critically reflect on the appropriateness digital assessment approaches and how to adapt strategies accordingly*

Table11 - Empower Learners: Learning Objectives

05. EMPOWER LEARNERS	NEEDS	GAPS DIFFERENCE BETWEEN CURRENT KNOWLEDGE, SKILLS, AND/OR PRACTICES AND THE DESIRED BEST PRACTICE	LEARNING OBJECTIVES
- *Accessibility and inclusion* - *Differentiation and personalisation* - *Actively engaging learners*	- *Social media in order to make teaching more attractive* - *New technologies to be used in the teaching process such as cloud and augmented reality* - *Personalisation of tools and applications* - *The personalization area for digitized courses is quite reduced as it is recognized that a personalized course, based on the differentiated need of learners doubles the content needed and also involves a differentiation system that increases the*	- *Preparation of physical and virtual environments*	- *The participant will be able to distinguish digital pedagogical strategies which respond to learners' digital context (contextual constraints to their technology use, competences, expectations, attitudes, misconceptions and misuses).* - *The participant will be able to identify digital technologies and strategies suitable for learners' in need of special support (learners with physical or mental constraints, learners with learning disorders).* - *The participant will be able to define which digital technologies can address the special needs of individual learners (dyslexia, ADHD, overachievers)* - *The participant will be able to handle digital technologies to visualise and explain new concepts in a motivating and engaging way (animations or videos)* - ***The participant will be able to develop ore demonstrate alternative or compensatory tools or approaches for learners with special needs when selecting, modifying or***

	price of the course - As smartphones and computers are the most common digitized content creator tool known to learners, most of the challenges are directed towards making content on these tools - Tools for gamification at all levels, that allows greater inclusion and motivation, improving the evaluation of knowledge and participation and inclusion. - Accessibility and inclusion		***creating digital resources.*** - ***The participant will be able to design principles for increasing accessibility for the resources and digital environments used in teaching.*** - ***The participant will be able to prepare for different learning pathways, levels and speeds when designing, selecting and implementing digital learning activities.*** - ***The participant will be able to administer learners to actively engage with the subject matter at hand (using different senses, manipulating virtual objects, varying the problem set up to enquire into its structure when using digital technologies*** - *The participant will be able to recommend appropriate digital technologies and resources for equitable access* - *The participant will be able to defend that all students have access to the digital technologies used* - *The participant will be able to evaluate the suitability of the measures implemented to improve accessibility and adapt strategies accordingly.* - *The participant will be able to conform employ digital learning environments or activities which are motivating and engaging (games, quizzes)*

Table12 - Facilitating Learner's Digital Competence: Learning Objectives

06. FACILITATING LEARNERS' DIGITAL COMPETENCE	NEEDS	GAPSDIFFERENCE BETWEEN CURRENT KNOWLEDGE, SKILLS, AND/OR PRACTICES AND THE DESIRED BEST PRACTICE	LEARNING OBJECTIVES
Information & media literacy *Communication* *Content creation* *Responsible use* *Problem solving*	- *Free and open source software in teaching process, will help to develop students' critical thinking, changing teaching practice, learning process and communication* - *Lack of knowledge on the integration of the digitized content into a unitary platform and every usage of creativity from the part of the learner involves an new (adapted) evaluation system from the part of the educator.*	- *Approach the very young to programming, computational thinking and problem solving*	- *The participant will be able to explain the basic of programming and computational thinking to young audiences* - *The participant will be able to recognize and illustrate how to understand the form and structure of information as the basis of computational thinking* - *The participant will be able to recognize and explain aspects of computation in the world that surrounds us* - *The participant will be able to recognize when and where learners digital competences need to be improved or updated* - *The participant will be able to understand which aspects of a problem can be solved with a tool and adapting a new use* - ***The participant will be able to collaborate with learners in defining their information needs and access digital information*** - ***The participant will be able to apply and suggest tools and techniques from computing to understand and reason about natural, social and artificial systems and processes***

			- ***The participant will be able to engage in a fresh way on issue such as programming, computational thinking and problem solving*** - ***The participant will be able to link digitized content to learners' creativity*** - ***The participant will be able to demonstrate ways of adapting communication strategies to cultural and generational differences*** - ***The participant will be able to monitor students behaviours in digital environment to protect their wellbeing and act as to change unsafe behaviours*** - *The participant will be able to assess the capacity of learners to evaluate sources of information, their reliability and credibility, and to adapt search strategies* - *The participant will be able to advocate for the importance of protecting one's reputation and dealing correctly with digital identities* - *The participant will be able to encourage learners to express themselves through digital means* - *The participant will be able to support learners in using digital technologies in innovative ways to create knowledge*

Conclusions

This report includes the Compilation of gaps and needs analysis in relation to DigiCompEdu and the Definition of overall Learning Objectives. The gaps and needs analysis was based on data that were collected from each partner during the implementation of the national report on gaps and needs analysis. Following the structure of DigiCompEdu (six different areas) the Learning Objectives were presented in the same order as in the DigiCompEdu Framework.

The documentation of the Learning Objectives will facilitate the next Task 4: Compilation of training methodology(Stage 1: Theoretical Framework & Outline Design, IO1: Curriculum and Open Resource Toolbox). The next step includes the design of the curriculum and instructional adequacy standards set, along with adult education principles and online learning methodology.