AGILE-2-VET

Abilitating Digital Learning to innovate the VET sector

Analysis of the mechanics of distance learning /
From storyboards to pedagogical prototypes

Report on Result 1

January 2023

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Executive Summary

Aligned with the EU Digital Education Action Plan (2021-2017), the EU Erasmus + project Agile-2-VET aims at increasing the capacity of VET providers to deliver inclusive and high-quality digital education. The project focuses on developing the ability to implement online teaching and learning in collaboration with other stakeholders, such as digital technology providers and digital education specialists. The Agile-2-VET Report on Result 1 observes the key characteristics and successful mechanisms of distance learning for adult trainees and the related skills that must be possessed by VET professionals. Although the use of, and reflection on digital media have been already considered in the context of adult education for the last decade, the Covid 19 pandemic has brought a series of demands in relation to the digital transformation within the VET sector, opening a digital competence gap. The hope that digitalization may solve all educational problems via media convergence is insufficient. Trainers and VET staff must increase their confidence and skills in using digital educational tools in order to provide high quality teaching. There is a real need to develop adult education at both theoretical and practical levels, seeking the design of effective methodologies to set innovative, up to date VET online training programs, looking after the learners' needs and adapting to macro level changes.

The methodology employed in this study consists of a triangulation between an overview of learning/holistic models and data from focus groups and surveys, which were conducted with VET professionals (n=76) in the national context of each partner (except Germany). The report investigates (1) the holistic components that must be considered in the complete value chain as to the creation of an online program (from development to evaluation); (2) the necessary skills to develop and implement high-level online training activities, illuminating the competence gaps among VET professionals; and (3) the consideration of diversity and inclusion in online VET programs. The results are, as follows:

(1) emerging from primary- (focus groups and surveys) and secondary data (the examined learning/holistic models), results lead to the design of a holistic online VET model, including precise steps (design, implementation and evaluation) with a constantly open feedback channel. In a sense, a VET online program is an adaptive system, altering its components as a result of multidirectional/iterative feedback loops. The proposed model also reinforces the need for constant evaluation, a process in which all partners already thoroughly engage. (2) VET organisations must embrace digitalization in all levels, providing CPD in digital skills for, and communicating the (new) digital vision to all organizational members. It is envisaged that the acquisition of digital skills will allow for a progressive cultural change towards becoming digital. (3) The VET sector must act towards the promotion and strengthening of individual media competence, offering guidance and support in the use of digital media. This in turn enables greater social participation, increasing motivation to learn and improving knowledge acquisition through the use of digital media. The focus on the learners' needs is key. The Universal Design for Learning framework can be used as part of an instructional design process, providing a structure to proactively design lessons that integrate inclusive strategies and options that can support all learners in the classroom.

1. Introduction

Although the use of and reflection on digital media have been already considered in the context of adult education for the last decade, the Covid 19 pandemic has brought a series of demands in relation to the digital transformation in adult education/VET. The hope that digitalization may solve all educational and societal problems via media convergence (Walter 2010) is insufficient (Schiefner-Rohs 2021). There is a real need to develop adult education at both theoretical and practical levels, seeking the design of effective methodologies to set innovative, up to date VET training programs. This in turn, would cater for the learners' needs and aspirations (Rohs 2021).

It is within such a context that the EU Erasmus + project Agile-2-VET operates. Trainers and VET staff must increase their confidence and skills in using digital educational tools in order to provide high quality teaching, adapting to the so-called "new normal". Aligned with the EU Digital Education Action Plan (2021-2017), Agile-2-VET envisages the strengthening of the capacity of VET providers to deliver inclusive and high-quality digital education, focusing on developing the ability to implement online, blended and distance teaching and learning in collaboration with digital technology providers and digital education experts.

Agile-2-VET Result 1 aims at identifying and analysing key factors (tools and skills) that are necessary for the development of successful holistic digital training programs. The research questions that orient the study are, as follows:

- Which components must be considered in the complete value chain in the creation of an online offer (from development start to evaluation)? How does a holistic digital training offer: from design to implementation and to the impact of the training, look like?
- What skills are necessary to develop and implement high-level online training activities? Are there competence gaps among professionals in the field of VET/adult education?
- How can the diversity of the target groups and issues such as inclusion be taken into account in the VET sector?

The report is structured in five chapters. *Chapter 1* introduces the study objectives. *Chapter 2* presents a literature review on a series of learning models, followed by *Chapter 3* where the methodology employed in the study is explained. Chapter 4 presents the results of the study and *Chapter 5* makes concluding remarks, objectively answering the aforementioned questions, and therefore moving towards Agile-2-VET Result 2.

2. Review of Learning/Holistic Models

This chapter brings a review of the key features of Agile Methodology, ADDIE Model, SAM, Systems Approach Model, Kemp Design Model, and Merrill's Principles of Instruction. Moreover, the application of all these models to the field of VET, and the learning/transfers to AGILE-2-VET are discussed. The chapter ends by acknowledging the importance of inclusion in the development of online VET initiatives.

2.1 Agile Methodology

2.1.1 Key Features

Derived from the field of software development, Agile methodology has revolutionized project management. It is an iterative model, where a constant repetition of planning and development phases takes place: Agile, "In its original physiological sense of the word refers to the capacity of a body to move itself in quick, light, and well-coordinated ways." (Gilles 2010, p. 01), which is consonant with the way software development is supposed to work: fast and flexible. In 2001, a small group of software developers in the US formulated a common basis of the methodology, which they recorded in four core sentences in the Agile Manifesto. This in turn gave space for 12 principles (Beck et al., 2001), which stands as the foundation for the many Agile methods being used today, such as Kanban and Scrum. The main principles are, as follows:

- Instead of planning projects once at the beginning and then strictly following this schedule, there are regular reflection rounds. Openness to change is the key to the agile mindset.
- In these reflection rounds, the team discusses how the last time period ("sprint") went, what should be changed and improved.
- The team adapts the behaviour and further planning accordingly. This includes an early "reality check": Do the ideas fit the practice? Can the user do anything with them? Will these additional functions be used at all? The answers to these questions are not analysed or assumed in advance, but the users are asked and involved. Agile methods thus prevent costly mistakes that would otherwise probably be discovered too late.
- The yardstick is the satisfaction of the customers, who want functioning software as quick as possible.
- Developers and business people work together and exchange ideas on a daily basis. Communication happens at eye level, directly and personally.
- Teams are self-organized, so they produce the best results (vgl. Beck et al. 2001)

2.1.2 Application of the model in the field of VET

Graf et al. (2022) transfer the Agile Manifesto to the educational context. They formulate the following Agile principles for learning:

- Individual needs of learners are more important than processes and tools.
- Functioning offers are more important than certificates and test results.
- Supporting the individual learning processes is more important than fixed models and tools.
- Reacting to change is more important than working through action plans (ibid, p.54).

The modern understanding of learning is shaped inter alia by constructivism and self-determination theory (Meissner/Stenger 2014, p. 121). In adult education, the didactic principle of participant-orientation also guides orientation. Participation is the core element here (Holm 2012, p.4), as learners and their needs are the main educational focus (Siebert 1985, p.70). At the same time, learners are said to lack the competence for participation in the adult education discussion; they would withdraw into a consumer attitude (Holm 2012, p. 13). The concept of agile learning is based on participation: without self-learning by the participants, a lecture is not possible (where this concept may help improve participation).

Thus far, there are only a few publications where the model is transferred from software development to educational processes and evaluation. A well-known example is the concept developed by Chun (2004), who states that continuous feedback loops can be used to adapt teaching to the needs of learners. Learning and teaching cycles are coupled and can be adapted by means of variety. In concrete implementation, this looks, as follows: Students learn the material themselves during the preparation time ("Ind Study"). They submit their results ("Share"), which the teacher then uses to check their previous didactic planning ("Monitor"), adapting it to the students' needs ("Adjust"). Afterwards, what has been learned is consolidated in exercises or group work ("Practice"). Through this formative assessment, the teaching material can be adapted to the competence level of the students (Chun 2004, p.14).
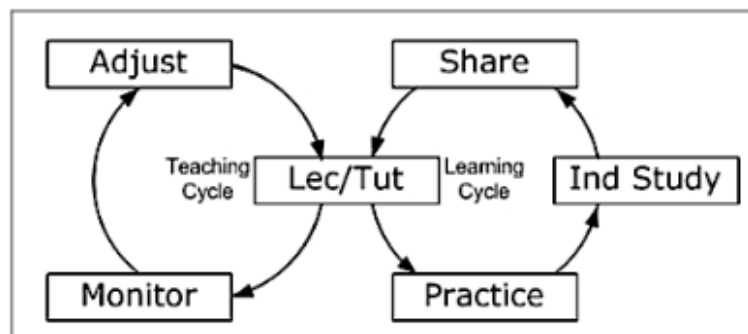
Figure 1: Loops of activity between teachers and students in an agile teaching process (Chun 2004, p.14).

Further parallels to the principles of Agile software development are shown below:

- Strict timing and clearly defined learning packages.
- Learning & growing together as a team: teachers and participants work together on the project and exchange ideas and experiences.
- Participants experience their competence, autonomy and feel included, which support intrinsic motivation (Meissner/Stenger 2014, p.132).
- Participants = Customers.
- Process of Agile software development = process of learning and teaching with teachers and participants.
- Customer satisfaction criterion = successful learning progress (Meissner/Stenger 2014, p.126).
- Regular reflection rounds to do a "reality check" if the learning concept still fits to the learners' needs, readjusting it when relevant.

Despite the great potential of the Agile methodology in the field of education, little has been published on Agile-inspired teaching and learning. Studies on the transfer of the Agile

approach to learning include the adaptation of the former to project-based courses (Monett 2013; Razmow & Anderson 2006) and the observation that some teachers develop their courses agilely (Tesar & Sieber 2010).

Furthermore, the concept of "Just-in-Time-Teaching" is of relevance as a further developed Agile learning & teaching concept (Marss & Novak 2004, p.123). Its key features are, as follows:

- Students will be given tasks before each lecture. In order to perform them, they have to acquire new knowledge. They do this either through research on their own or with materials/sources provided by the teacher. On the learning platform, the students upload the results as well as their questions about the new content.
- Important note: qualitative questions and problem-solving tasks given to students offer the teacher more insight into the learning level of the students.
- Agile in this teaching concept stands for: quick & continuous feedback/self-direction/learner-centered execution & design (Deci & Ryan 1993).
- Interaction loops between teachers and students allows agile learning.

Figure 2 below displays the process of "Just-in-time teaching":
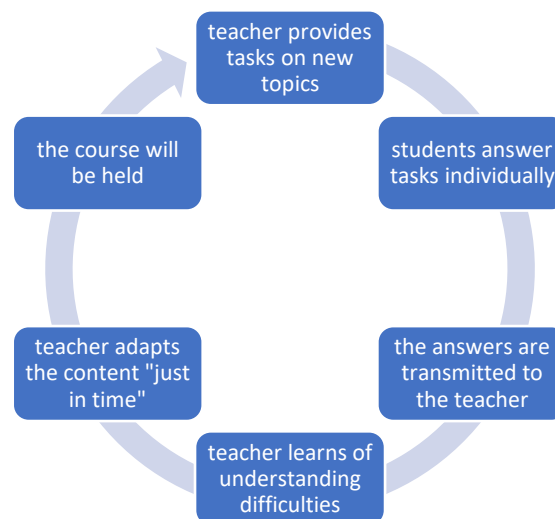
Figure 2: Process of Just-in-Time teaching (translated from Meissner/Stenger 2014, p.123).

The effects of Just-in-Time-Teaching are: improved learning outcomes (Gavrin, Watt, Marrs & Blake, 2003; Moravec, Williams, Aguilar-Roca & O'Dowd, 2010; Luo,2008; Marrs & Novak, 2004; Simkins & Maier, 2004) as well as a positive effect on the understanding of concepts (Formica, Easley & Spraker, 2010; Kamph, Salden, Schupp & Kautz,2013).

2.1.3 Learning/transfer to the project

Given Hasenbein's (2020, p.87) steps below:

- Assessment of learning needs -> derivation of learning goals
- Planning of the learning paths ("LERNWEGE")
- Support during the implementation process
- Reflection of the learning process

Do teachers from the focus groups also take these steps to promote self-learning skills?

Furthermore:

- Teachers as agile learning tutors must be willing to learn and adapt to the students' needs.
- Teachers need planning and organizational ability.
- Understanding of people & organizations in terms of dealing with change, initiating self-reflection, digital skills, coaching skills (Hasenbein, 2020, p.88).
- Do teachers think in sprints? Or in feedback loops? Are there interaction loops between teacher and students? (Meissner & Stenger 2014).

2.2. ADDIE Model

2.2.1 Key features

The ADDIE Model has its origin in 1975, when it was developed for the US army (Branson 1975). Most of today's instructional design models are variations of ADDIE, which is a five-phase instructional design framework. The name "ADDIE" is an acronym of this phases (Kurt 2017), as exposed below:
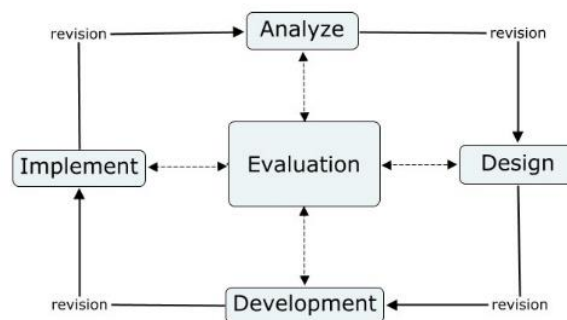
Figure 3: ADDIE Model (Kurt, 2017).

1. Analysis

In the Analysis Phase, information about the target group will be gathered. It is important to balance the level of the learners' skills to the content. Instead of repeating the content they already know, the teacher should focus on skills that they want the students to be able to do after the lesson. The teacher should find out the skill level with the help of course documents, syllabi and the internet. After analysing the target group and the background of the learners (age, learning experiences, culture, …) teachers should ask themselves the following:

- What do they need to learn successfully?
- What skills should learners bring with them?
- Inspection of the teaching methods: do these fit the target group?
- What are the learning goals?
- What is the most conducive learning environment?
- What are the limiting factors (technical skills, technology, time, human resources, finances, support)?

2. Design

In the design phase the lecture will be elaborated. The goals, assessment, content and resources have to be planned.

- Which media to choose?   (Audio, Video, Graphics). Who will prepare the teaching material?
- Create a learning roadmap.
- Which interface to use?
- Time frame for each activity.
- Decide for feedback mechanism.
- Pinpoint the main idea of the lecture.
- Choose learning methods that fit the participants.

3. Development

The testing of the methodology starts in this phase. The data from the previous phases are used to developed the lecture. The main tasks are drafting, production and evaluation. Evaluation also includes the test of learning outcomes: Does the time frame fit? Are the participants working together? Do the materials match the content?

4. Implementation

The instructional designers (IDs) and participants work together to create the product. IDs draft a course and get feedback from the participants. In the implementation phase, the instructional design is also evaluated. IDs should constantly redesign and improve the product.

5. Evaluation

Although evaluation occurs in the previous phases, this phase will constitute the final evaluation of the whole product. The main objective of the evaluation phase is to determine whether the objectives have been achieved and to identify what is needed in the future to make the lecture even better (Kurt 2017).

2.2.2 Application of the model in the field of VET

E-content phases	Sample Tasks	Sample Output
Analysis the process of defining what is to be learned	❖ Needs assessment ❖ Problem identification ❖ Task analysis	✓ Learner profile ✓ Description of constraints ✓ Needs, Problem Statement ✓ Task analysis
Design the process of specifying how it is to be learned	❖ Write objectives ❖ Develop test items ❖ Plan instruction ❖ Identify resources	✓ Measurable objectives ✓ Instructional strategy ✓ Prototype ✓ specifications
Development the process of authoring and producing the materials	❖ Work with producers ❖ Develop learning materials, flowchart, program	✓ Storyboard ✓ Script ✓ Exercises ✓ E-content package instruction
Implementation the process of installing the project in the real world context	❖ Students training ❖ Tryout	✓ Student comments, and data
Evaluation the process of determining the adequacy of the instruction	❖ Record time data ❖ Interpret test results ❖ Survey graduates ❖ Revise activities	✓ Recommendations ✓ Package report ✓ Revised prototype

Table 1: Adaptation of ADDIE to e-Learning course (Muruganantham 2015, p.53).

Wahyudin & Darmawan (2022) used ADDIE to create their E-Learning English course. Phase A, *Analysis,* identifies the probable causes of a learning performance gap, exploring the student's needs and determining the learning target. *Designing* is about reviewing the desired performance and appropriate testing methods. *Developing* concerns creating and validating learning resources. *Implementing* involves preparing the learning environment and engaging learners. *Evaluation* relates to the quality of educational products and processes before and after implementation.

Moreover, the study of Yulastri et al. (2017) sought to produce entrepreneurial learning tools that are practical and effective for feasible use in the field. This research used the ADDIE Model by applying research and development (R&D) methods. Subjects of this research were students of electrical engineering in Vocational Higher Education who took entrepreneurship courses. Surveys with lecturers and students were employed, while a descriptive data analysis technique was used to describe the practicality and effectiveness of product-based entrepreneurial learning tools. The results of this research are, as follows: (1) a product-based learning tools, (2) based on the lecturers' response, the practicality of product-based entrepreneurial learning tools was considered practical (87.14%); and based on the students' response, the practicality of the learning tools is 80.89%. (4) the product-based entrepreneurial module is effective to improve students' learning outcomes (20.38%). Based on the research findings, it is concluded that the product-based entrepreneurial learning tools are practical and effective to be utilized in entrepreneurship courses.

2.2.3 Learnings/transfer to project

- How much rigidity or flexibility do development models need in practice?
- What are the advantages or disadvantages of instructional design in development?
- How do the individual steps look like in practice?

2.3 SAM (Successive Approximation Model)

2.3.1 Key features
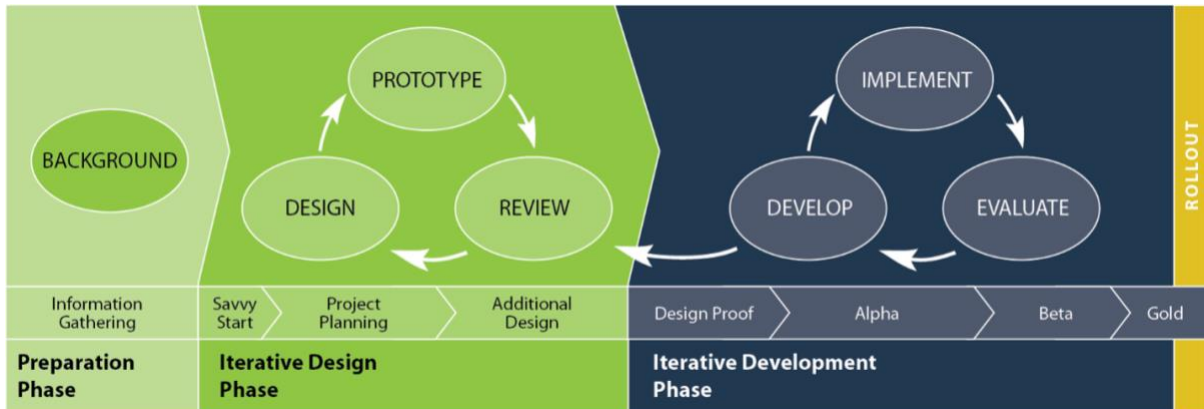
Figure 4: SAM (Sites & Green 2014, p.XII).

SAM is a concept for instructional design that consists of repeated small steps (or iterations) designed to solve some of the most important problems associated with instructional design. These include, for example, adherence to schedules and budgets, and collaboration with experts. ADDIE has been criticized for being too inflexible and too linear (Kruse 2009). In this way, SAM solves the problem of inflexibility: it is a simplified version of ADDIE designed to elicit feedback to improve the product in iterative loops. The phases of this model are, as shown below:

In the *Preparation Phase,* there is a need to collect information about the project to get the whole background clear (Sites & Green 2014, p.40). The *Iterative Design Phase* aims at developing material and building a prototype. It starts with the "Savvy Start", where brainstorming, sketching and prototyping takes place to develop learning material. With this, the prototype will be developed. The parties look at the latter, giving feedback on it. Creating a prototype is important because it is easier to give feedback on concrete material than on vague ideas. (ibid, p.42). The product will be finally developed and implemented in the *Iterative Development Phase*. As soon as this has happened, the product will be reviewed. If there is a need to change or improve something, the phases are run through again (p.45).

- Alpha Review: after the prototype, the alpha version is produced from approved design. The review of alpha is expected to find minor deviations from style guides, graphical errors, writing issues and functional problems. (p.47).
- Beta Review: the beta version is the modified version of the alpha. Beta version is the gold version candidate, which will be evaluated. There should be no functional errors anymore, just typographical errors or graphic errors (p.47). If no problems are identified, the beta version becomes the gold version and rolls out (p.178).
- The Gold Review (p.181) completes modifications and stands as the last version (ibid, p.47).

2.3.2 Application of the model in the field of VET

SAM was used for the process of designing blended learning on differential calculus. In the preparation phase, the information gathering ensures an agreement between the learner's needs and the respective learning solution. Afterwards, the design and prototype of a blended

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course was implemented for mathematics education students (Wintarti, Abadi & Fardah 2019). The blended learning of differential calculus was delivered for a class with 40 students. The authors ran a course and got feedback from the students (alpha version).

A few studies have been conducted to provide real-world examples of how SAM can be used by instructional designers to develop e-learning content. Jung et al. (2019) develop e-learning content based on SAM, providing empirical descriptions of the instructional design process for researchers and practitioners. This model was designed and developed through three phases: *preparation phase, iterative design phase, and iterative development phase*. The participants were learners, subject matter experts (SME), instructional designers (ID), and prototype-makers. The alpha, beta, and gold versions of the e-learning content were developed based on the SAM method. The results revealed that the final (Gold) version, based on SAM, was more impactful and user-friendly, compared to the traditional e-learning environment – according to the learner's perspective (Jung, Kim & Lee 2019).

Jung et al. (2019) followed exactly the SAM steps. They collected information about the students' needs in the preparation phase, interviewing them on their perception of former e-learning courses they had previously participated in. The survey indicated that achievement, pace, interest and concentration were relatively higher than difficulty, fatigue and irritation (p.198). Based on the surveys the teachers decided for the right technology for their course: 5 min HTML5 videos, as per Table 2 below:

Core Needs	Trends	Technology
Learners want to have many byte size videos instead of long video due to lack of concentration	Micro-course	HTML5
Learners want to have accessibility to many devices for convenient learning	Mobile learning	Responsive web
Learners want to find information that they need instantly and exactly		Learning analytics
Learners want strong evaluation to confirm their learning achievement		
Learners want to develop their work skill from E-Learning	Learner centered learning environment	Clouded LMS
Learners want to have a choice about advanced courses		
Learners want to directly utilize what they learn into their workplaces		
Learners want to study trendy contents		APIs
Learners want to have diverse activities from E-Learning	Blended learning	Online conference
Learners want to learn effectively (do not want to see extra things in the course)	Saving time	Video in learning
Learners want to have instant feedback about their questions on the course	Social learning	Corporate MOOCs
Learners want to have AR/VR courses that give interactive experiences	Learning experience	Augmented learning
Learners want to learn from an instructor having rich working experiences (professional workers)	Open educational resources (OER)	In-House content authoring

Table 2: Following SAM steps (Jung et al. 2019, p. 197).

With this information, they started the iterative design phase and thereby the savvy start phase. People who worked on this start were recent learners, potential learners, prototype-makers, Instructional Designers and subject matter experts (SME). SMEs said, that the lecture should begin with interesting information, so the learners get motivated. The aim of a lecture should be presented clearly, so learners can see the value of the content for their lives, increasing their engagement. Recent learners helped to choose the content. They also help new learners

to navigate through the lessons: which parts are relevant for their jobs? Which parts are easy or difficult to learn? Potential learners help with doing the user-test and review. They can, for example, tell which parts of the content will be relevant for their lives and job and how long lectures should be at most (Jung et al. 2019, p.198).

In the following phases, the parties worked closely together. SMAs designed the lecture by using text narration. IDs reviewed this alongside concerning the learners needs. They gave their feedback to the SMAs and they reworked their lecture and build a prototype. This was tested and commented by the learners. In what followed, the IDs renewed the lecture and published the final content (ibid, p.199).

In the iterative development phase, the SMAs and IDs rotated again and again with designing, prototyping and renewing the content. Based on the learner opinions of version alpha, they formed beta version. They decided to form two types of lectures for different target groups. The learners gave feedback and the gold version was developed. Jung et al. (2019) conclude that SAM helped them a lot to fit the lecture to student's needs. Because of the iterative feedback loops, the whole process was agile and lectures could be created and revised fast.

Furthermore, Stewart & Palmer (2015) used SAM to create a E-Learning course. They concluded that SAM was very useful to redesign their marketing management course to a blended format. It helped them to receive quick feedback by student data and to fit the course to their needs (Stewart a& Palmer 2015, p.1197). Another example is given by Ali et al. (2021), who compared SAM and ADDIE on teaching of Science, Technology, Engineering and Mathematics (STEM) subjects in Ghana. The sample consisted of 30 student-teachers who offered E-Learnings. The first stage of the analysis compared the models separately using pre-post experiential design. The second stage made comparisons between and within the two models. The results of both stages showed that student-teachers preferred mostly SAM to ADDIE instructional models. There were not only consistently higher mean gains in the latter model, but the group averages of student-teachers in the post-treatment results also demonstrated clear improvements. Again, student-teachers showed tremendous improvements in the conceptual understanding of both models. However, the Successive Approximation Model recorded much more improvements in both pre-treatment and post-treatment results. The authors therefore recommend SAM for the experimental explorations of STEM.

2.3.3   Learning/Transfer to project?

- To what extent does evaluation play a role in the design of online offerings?
- What is the position of the different steps in the development?
- Are there more popular/easier steps? Which are neglected? For what reasons?

2.4 Systems Approach Model

2.4.1 Key Features
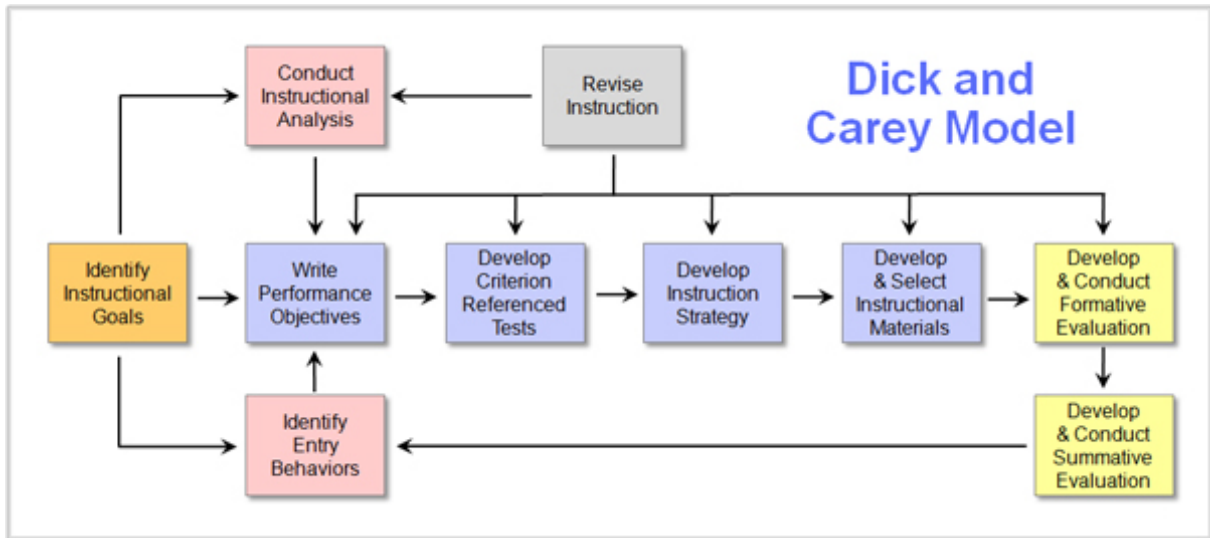
Figure 5: Systems Approach Model (Dick and Carey Model) (Dick and Carey, 2014).

Dick and Carey propose a 10-step model approaching the Instructional design in a systematic way. The design process is seen as a whole where the whole is greater than the sum of the parts. However, it is necessary to breaking down complex instruction into smaller component parts. 4 main elements that make up the system that are integral to effective instructional design:

- Context
- Content
- Learning
- Instruction

The ten steps are, as follows:

1. Identify instructional goals: what learners must be able to do when they complete the instructions (it may be derived from need assessment, job analysis, practical experiences...)
2. Conduct instructional analysis: identify the type of learning required and the steps required for each goal.
3. Identify entry behaviours (prior knowledge, traits, levels of motivation and other factors that will affect learning experience of learners)
4. Write performance objectives (Considering what the student should be able to do by the end of the course, they include the behaviours to be learned, the conditions under which they will be performed, the criteria that must be met)
5. Develop criterion-referenced assessment (to measure the learners' ability to master what is described in the objectives)
6. Develop instructional strategy (pre-instructional activities, presentations of information, practice and feedback, testing, follow through activities)
7. Develop and/or select instructional materials (in a variety of formats)
8. Develop and conduct formative evaluation (review, focus groups, testing of portions of the course and piloting the course)

9. Develop and conduct summative evaluation (once you have delivered your course, this evaluation would be used to assess its effectiveness)
10. Ongoing Revision (continually review and revise throughout the instructional design and development process)

It is important an <u>ongoing process of revision</u>, "using information to reassess assumptions and decisions". The essence of this model is the relationship that is built between the stimulus and the response, the stimulus being the didactic materials and the response the learning of these materials by the student, and the stages create the conditions for that relationship to be established.

2.4.2 Application of the model in the field of VET

The literature in the VET field is not very large and does not mention the System Approach Model. Nevertheless, there is a study from Balta (2015) related to develop an instructional design model for science laboratory instruction. Science lab is a methodology used not only in secondary schools but also in VET education and we can extend this study to this field. Dick and Carey model was imitated to produce a science laboratory instructional design model (called SLID) as a way to enhance the process of teaching and learning science in laboratory setting. A survey with 34 science teachers (working in high schools) proved that SLID provides a well-structured model to inspire science teachers (also those inexperienced) to design a systematic laboratory learning environment.

2.4.3 Learning/transfer to the project

- Formative assessment
- Ongoing revision

The data of the formative evaluation are used to re-examine the validity of the instructional analysis and the assumptions about the initial skills and characteristics of the students. These results are used to make revisions to the process.

2.5 Kemp Design Model

2.5.1 Key Features
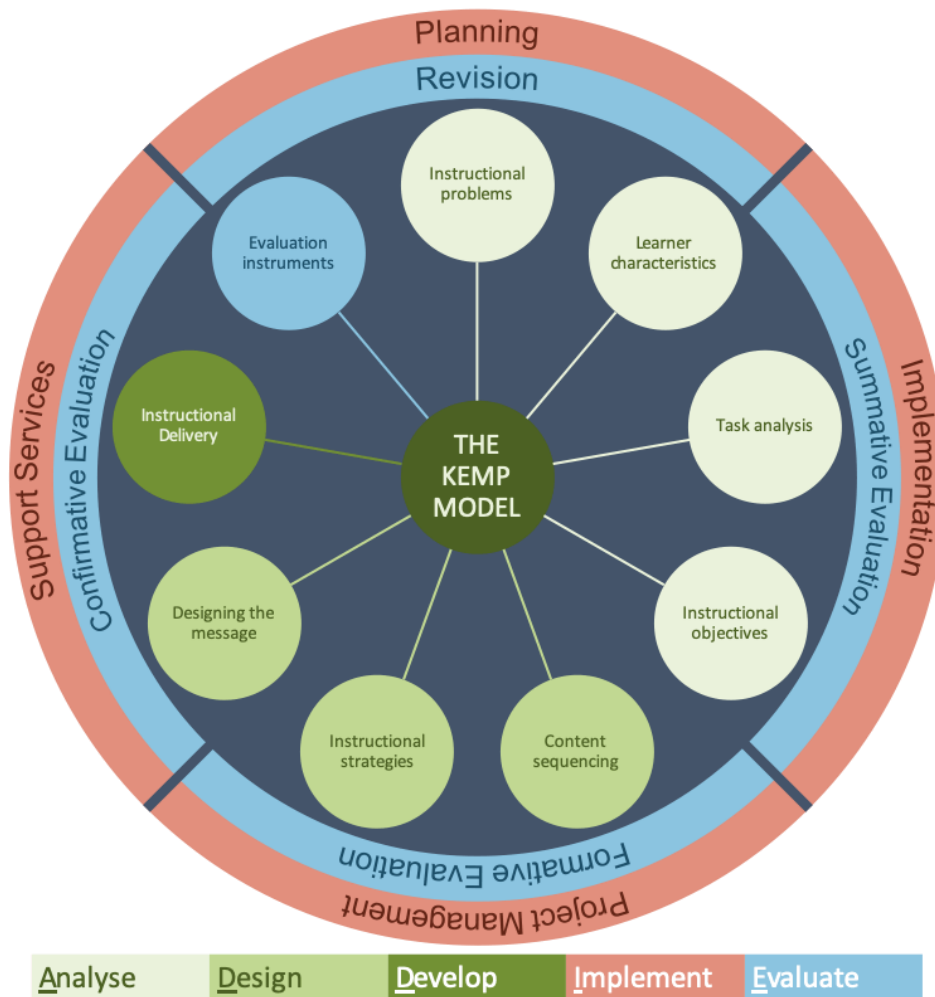
Figure 6: The Kemp Model (Kurt, 2016)

Whilst the other instructional design models follow a more linear approach, the Kemp model is counted by a circular and interrelated iteration of the phases of instructional design (ID). The model is carved around nine core elements that are connected to the five ADDIE's model steps:

Analyse

- Identify specific goals and potential instructional issues
- Identify the learners' characteristics to be taken into account during the planning process
- Analyse the task components in relation to the stated goals and purposes of the course
- Define instructional objectives and desired learning outcomes

Design

- Ensure that content for each instructional unit is structure sequentially and logically to facilitate learning
- Design instructional strategies to enable individual learners to master the content, and achieve desired learning outcomes

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- Plan the instructional message and the appropriate mode of delivery

Develop

- Develop evaluation instruments suitable for measuring and assessing learners' progress towards achieving course objectives

Implement

- Choose the appropriate resources that will support both teaching and learning activities (Pappas, 2021).

The model's approach is circular in the sense that these nine core elements are seen as interdependent components. This allows instructional designers a significant degree of flexibility: it is possible to begin the design process from one of the nine components, rather than being forced to follow a linear sequence of steps.

The flexibility of this model is also guaranteed by the constant possibility to adjust the instructional design practice and by the continuous process of evaluation (Revisionary, summative, formative and confirmative) that goes hand in hand with the different phases of the ID practice (planning, implementation, project management, support services).

2.5.2 Application of model in the field of VET

The literature concerning this model's use in VET field are not many: one honourable mention that worth to be mentioned is Obizoba's 2015 work. Obizoba (2015) tested the Kemp design model in nursing content-laden curriculum, and identify it as an effective model in blood transfusion learning activity for students. The Kemp model is particularly useful in medical-surgical nursing training because its flexibility and its capacity to activate a dialogue between the different phases of instructional design.

2.5.3 Learning/transfer to the project

- This model is suitable for those who lack experience with instruction design;
- The flexibility of the model is more suitable for VET's contexts;
- The model is focused of the learners' characteristics and needs;
- The whole instructional design is more focused on the context where the learners are from and will operate.

2.6 Merrill's Principles of Instruction

2.6.1 Key Features

Figure 7 : Merrill's Principles of Instruction. Available at
https://discoverlearning.com.au/2021/06/how-to-apply-merrills-instructional-design-principles/
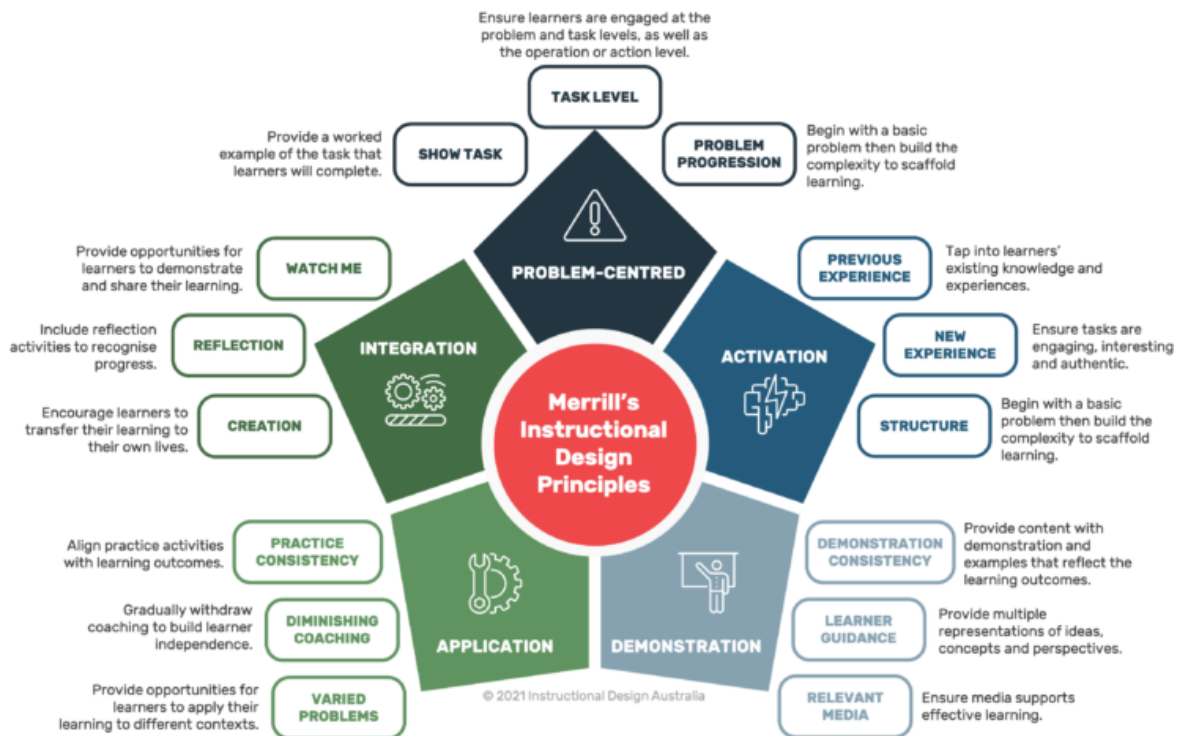
Figure 8 : Merrill's Instructional Design. Available at:
https://discoverlearning.com.au/2021/06/how-to-apply-merrills-instructional-design-principles/

The key is to engage and motivate online learners to play an active role in their learning process. Merrill proposes an Instructional Design model based on 5 core principles: demonstrate, applicate, activate, integrate, and engage.

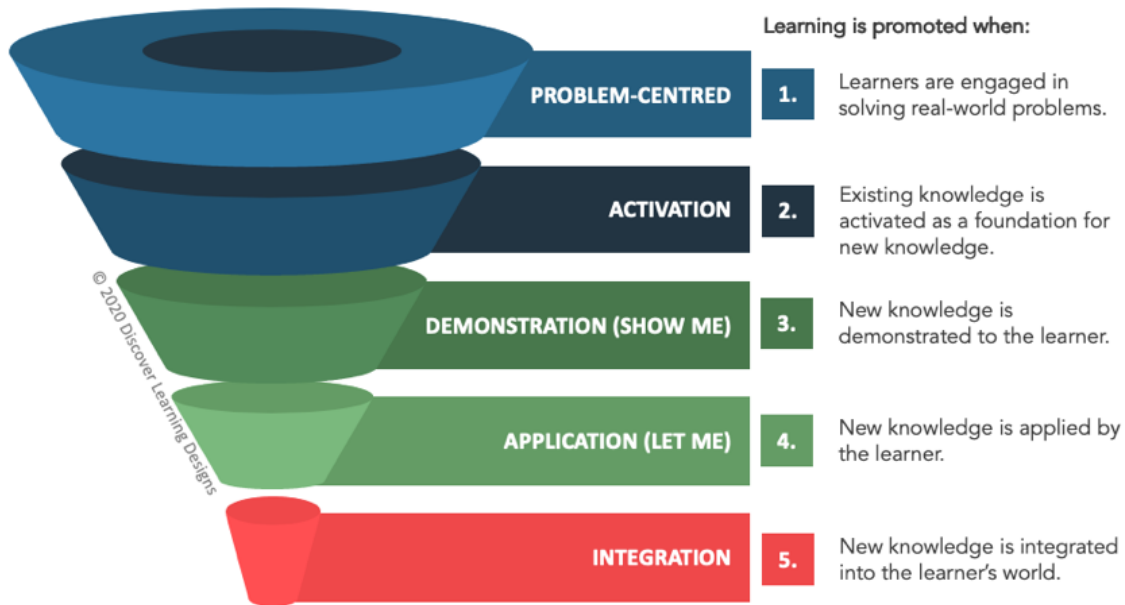1. Demonstration. Learners can learn information effectively when they see a prime example (e.g., videos, infographics, and pictures illustrating the main ideas).
2. Application. Learners must apply the information and skills they have learned to benefit from the eLearning course. It is crucial to emphasize interactive problem solving and real task execution (e.g., solving a case study or using their skills to resolve a problem, formulate action plan etc.).
3. Activation. Acquiring information is not enough. Online learners must also be able to connect it to pre-existing knowledge and mental schema through, for instance, real examples, simulations and stories that merge the old with the new knowledge.
4. Integration. Learners must have the opportunity to integrate their newfound skills or knowledge into their daily lives. This also influences the motivation of the trainee.
5. Engagement. It is task-centred learning, which encourages online learners to engage with eLearning content (e.g., collaboration in online groups, autonomous participation in interactive scenarios).

2.6.2 Application of model in the field of VET

There are no specific applications in the VET field. Merrill's model is designed to be applied across multiple educational and training contexts (online and off-line). Merill's principles can guide both the design of teaching content and activities. Moreover, the principles support an active (and interactive) learning approach.

Active learning implies the design, implementation, maintenance and promotion - inside and outside the classroom - of a learning environment, through the creation of opportunities for active engagement related to the subject and content being taught. Active learning endeavors to activate teaching methods able (also) to sustain higher-level and divergent learning processes. To foster this method, teachers may choose from several teaching strategies that view students as active protagonists in their learning. To be actively involved, "students must engage in such higher-order thinking tasks as analysis, synthesis, and evaluation … that strategies promoting active learning … defined as instructional activities involving students in doing things and in thinking about what they are doing" (Bonwell & James, 1991, p. iii).

It is evident then how some specific methodologies or working techniques that can support student participation and involvement can be linked to the Merrill's principles. Among these we can mention, for example, the eTivities proposed by Gilly Salmon[1]; the so-called Problem Based Learning (PBL) approaches, where relevant problems are introduced at the beginning of the instruction cycle and used provide the context and motivation for the learning that follows (see some examples contained in the European project eLene4life[2], the collaborative learning approaches where students work to achieve a common goal, learn in small groups, helping each other and feeling co-responsible for the process and the result achieved.

Referring to the design and implementation of content/experience an important reference model is undoubtedly Universal Design for Learning which will be described in depth among

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[1] https://www.gillysalmon.com/e-tivities.html

[2] https://elene4life.eu/dynamic- toolkit/

the models considered in desk research. The UDL framework, used as part of an instructional design process, provides a structure to proactively design lessons that integrate inclusive strategies and options that can support all learners in the classroom (Meyer et al., 2014).

The above-mentioned examples are not intended to be representative of the teaching techniques and strategies to be promoted within the principles, but only possible sources of inspiration to guide the pedagogical design of the teaching-learning paths.

2.6.3 Learning/transfer to the project

The instructional design principles outlined by D. Merrill may easily be transferred to the VET field. In particular, the focus on active and effective learning seems very relevant and consistent with the aims of our project. The indications are immediately reflected in the design of teaching-learning pathways, enhancing the individual and social dimensions of learning. The concrete effects of the above principles can also be found in the design of teaching materials and activities based on the definition of real and challenging tasks. In what follows, inclusion in the development of online VET offers is discussed.

2.7   The importance of inclusion in the development of online offers

One of the key elements is to consider how the **diversity** of target groups and issues, such as **inclusion** can be taken into account in the development of online offerings.

2.7.1 Aims/ key features from the link Inclusion & Online Offers & VET?

The inclusive dimension could be further discussed: to what extent does the inclusive attention (e.g. references to UDL) allow to promote access and participation process, considering also the need of the people with disabilities, with different cultures, languages, religions, values, and in relation to their gender? To what extent teaching-learning strategies were promoted to support learning when students encounter difficulties? How is the active participation of learners guaranteed?

The word originated in 1985 by the American architect Ronald L. Mace (North Carolina State University). Mace, who had polio, was interested in accessible design issues all his life and thus defined Universal Design: "*Universal design is the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design*".

UDL –SEVEN PRINCIPLES[3]:

1 -Fairness-fair use: usable by anyone.

2 -Flexibility-flexible use: adapts to different skills.

3 -Simplicity-simple and intuitive use: the use is easy to understand.

4 -Perceptibility-transmitting actual sensory information.

5 -Error tolerance-minimize risks or unwanted actions.

6 -Containment of physical effort-use with minimum fatigue.

7 -Sufficient measures and spaces-make the space suitable for access and use.

We should consider the following aspects related to Inclusion:

- Ensure accessibility of the platform and of the contents to all the students (with disabilities and non)

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[3] See https://udlguidelines.cast.org

- Putting all the students in the best possible conditions to limit all forms of digital divide
- On the side of the trainers/teachers: attention in not having "hidden curricula" that can bend the learning experiences toward limited visions of aspects related to the contents (e.g.: sexist visions or pre-conceptions, homophobic attitudes, etc.)

Accessibility

The checkpoints employed by these guidelines are summarized as follows (Pearson & Koppi 2002):

- ensure consistent and appropriate use of graphics, icons and other visual cues;
- ensure all graphics, figures, and other illustrations include a text equivalent;
- organize content to take account of the transition to an online environment;
- use the features provided by WebCT to organize and structure course content;
- make PDF and other read-only file formats accessible;
- be aware of the limitations of screen readers in interpreting unusual text, characters and abbreviations;
- ensure that tables are carefully and appropriately used;
- ensure appropriate use of colours and contrasts in screen design;
- provide alternative sources of information for video or audio.

Web Content Accessibility Guidelines (WCAG): some examples are Alternative Text for Images (people who cannot see and use a screen reader can access images), Keyboard Input (some people cannot use a mouse), Transcripts for Audio (audio files are not available to people who cannot hear), Using Specific font and larger. The WCAG documents explain how to make web content more accessible to people with disabilities[4].

Cultural elements

> *Designers need to construct meaningful frameworks for making appropriate decisions regarding visual design and user interaction. It is important that we can provide these learners with an environment that they feel comfortable learning in. This is where the blended learning provides instructors with the ability to incorporate both traditional and e-learning design and strategies. […] Issues such as: the variations in access to technology; learning traditions; cultural expectations; instructors and learners, all must be considered and analyzed with blended e-learning approach. Management awareness of the potential of technology; curriculum relevance; and the level of expertise of (Al-Hunaiyyan, Salah & Al-Huwail 2008, p.X).*

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[4] https://www.w3.org/WAI/standards-guidelines/wcag/

Figure 10: Inclusive Language (UNIBO, 2022)

Inclusive language is designed to avoid excluding people on the basis of gender, sexual preference, age, race, ability, cultural background etc. It avoids offensive language, and aims for social justice[5].

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[5] https://developers.google.com/style/inclusive-documentation

https://developers.google.com/style/translation

https://docs.microsoft.com/en-us/style-guide/bias-free-communication

3. Methodology

The study was composed by a combination of methodological efforts from the partners. SADE, ANEL and Demetra made use of focus group as a method, while Mooka Media and Ancora utilized survey as a method to collect data (n=76). The data set includes the following themes:

- Course development– related to development of the training material;
- Learning process- related to pedagogy;
- Course structure- objectives, teaching materials, resources and IT tools;
- Learner support- services offered to learners before, during and after the training course;
- Evaluation and assessment- processes and procedures used to evaluate effectiveness of training provided.

The study follows Wolcott's (1994) methodological teachings on the descriptive and analytical elements of qualitative research. In Chapter 4, data from all partners is described according to the following thematic areas (which also served as an orientation for the focus groups and surveys)[6]:

1. Step Analysis
2. Deepening in contents, tools and materials
3. Information on the target group/ aspects related to inclusion
4. Information on tutoring processes
5. Information on the monitoring/evaluation phase
6. Survey on skills
7. Information on online training experience

Further on, Chapter 5 brings the analytical dimension of the study (Wolcott 1994), answering the following questions:

- Which components must be considered in the complete value chain in the creation of an online offer (from development start to evaluation)? How does a holistic digital training offer: from design to implementation and to the impact of the training, look like?
- What skills are necessary to develop and implement high-level online training activities? Are there competence gaps among professionals in the field of VET/adult education?
- How can the diversity of the target groups and issues such as inclusion be taken into account in the VET sector?

The next chapter presents the results of the focus groups and surveys employed in each partner's national context.

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[6] See Appendix 1 for the focus group guide, bringing the full list of questions in accordance with each thematic area.

4. Results

4.1 Background of focus group/survey participants

4.1.1 Ireland

A total of 31 participants took part in the survey, which encompassed Mooka Media and Ancora's data collection efforts. The majority of the sample was composed by women (74%) between 40-59 years of age – with over 70% of participants holding a Master's degree and having more than 10 years of experience in the VET sector. Through self-assessment, participants level of expertise in online learning was overall classified as high and medium. The sample had representatives from a variety of professional segments (private, public, educational institutions, and VET) with 58% of participants working in the private sector. In their roles, respondents were responsible for design (80%), development (73%), evaluation (57%), training delivery or being a facilitator (43%). In relation to the nature of the learning programs, most participants were involved in soft skills training (87%), compliance (52%), academic (45%), and regulatory (35%). Moreover, 74% of the sample design learning activities for over 20 students/participants, whereas 23% have a cohort between 10 and 20 individuals. All survey participants deliver online training in different proportions, varying from 25% online delivery (adopted by 20% of participants) to 100% (adopted by 23% of respondents).

4.1.2 Spain

A total of 15 participants took part in the focus group session held by ANEL. The sample was gender balanced with a majority of participants between 46 and 56 years of age (age range of the sample between 36 and 60 years). The majority of respondents (75%) hold a university degree and work directly in adult training (70%). Participants have an average of 20 years of experience in the field of adult learning with its majority operating in private or "mixed" organizations (75%). In their roles, respondents were responsible for design (68,8%), development (81,3%), evaluation (50%), training delivery or being a facilitator (68,8%). In relation to the nature of the learning programs, most participants were involved in technical training (87%), skill building (62,5%), academic (56,3%), and legal (12,5%). On average, participants design learning activities for 20 students/participants per classroom.

4.1.3 Sweden

A total of 15 participants took part in the two focus group sessions held by SADE (7 participants in the first and 8 in the second). The sample was formed by a majority of women and the average age of participants ranged between 41 and 60 years of age (half were between 51 and 60 years of age). The majority of respondents hold a university degree and work directly in adult training. Participants have an approximate average of 20 years of experience in the field of adult learning and digital adult learning with its majority operating in government organizations. In their roles, respondents were responsible for design, development, evaluation, training delivery or being a tutor. In relation to the nature of the learning programs, most participants were involved in commissioned training, VET and academic. Most participants design learning activities for over 20 students/participants per classroom.

4.1.4 Italy

A total of 15 participants took part in the two focus group sessions held by Demetra (6 participants in the first and 9 in the second). The profiles of the first focus group participants (**a**) are shown below[7]:

Participant 1a is an Emilia-Romagna Region training expert from May 2008 to present, dealing with:

- digital skills development of citizens within the regional project "Bread and Internet"
- management of the "Emilia-Romagna Region Federated E-learning System"
- digital literacy development actions and projects
- development of digital literacy curriculum for citizens
- management and implementation of digital literacy events
- design and implementation of e-learning activities
- development of networking actions and collaborative networks among PAs at the regional level

Participant 2a works in Reggio Emilia at IFOA, a training organization present throughout Italy; he has been working in training since 2019 and is responsible for the training of unemployed youth and adults.

Participant 3a is a planning manager at QUADIR, a training organization in Reggio Emilia; she has been working within the training field since 2004. Within her company she deals with the analysis of training and business consulting needs and the design of training plans for client companies.

Participant 4a is the operations coordinator at ECIPAR, a CNA (trade association) training organization, present throughout the country. She has worked in training since 2007 with the task of coordinating and monitoring a team of people who manage training courses and design in-house trainings for client companies.

For more than 30 years, **Participant 5a** has been involved in the development of companies that have operated and operate in the fields of training, publishing and multimedia technologies. She has gained experience in general management, assuming roles of responsibility in different realities: from consortium companies engaged in the development, at national and European level, of multimedia products for online training and platforms for e-learning and knowledge management, to University Consortia for the development of Specialized Higher Education through the management of Global Grants. At the same time, he has taken on roles as Board Member and President of companies for the implementation of research and technology transfer projects and Specialized Higher Education based on cooperation between Companies, Research Centers and Universities.

Participant 6a is the coordinator, since 2007, within "Scuola Centrale Formazione," a nonprofit association recognized by the Ministry of Labor as a national training organization. The association works in the field of vocational training and job transition, nationally and internationally, promoting innovation and development of good educational practices, international openness, social inclusion, member development and educational welfare. She

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[7] The names of the focus group participants are not disclosed in order to guarantee their anonymity.

is the coordinator of regional services, supervises activities related to educational innovation and carries out design support actions.

Furthermore, the profiles of the second focus group (**b**) participants are displayed below:

Participant 1b is the head of research and development area at IQC Italian Quality Company since 2018. In the company she is in charge of:

- Market analysis and business development
- Functional analysis
- Management of projects and relations with stakeholders, internal and external
- Process analysis for management control system design
- Business budget preparation in collaboration with different business functions
- Quarterly revenue and cost monitoring by identifying deviations between realized and planned
- Reporting on research and development projects.

IQC offers Integrated Services to support Business by combining highly professional consulting interventions with Blockchain technology solutions for digital tracking of organizations' performance and people skills with the aim of preserving the value chain in all economic and social transactions.

Participant 2b is the training manager at Marchesini Group S.p.A. since 2001. Within the company she is responsible for:

- Selection of personnel for the Group.
- Coordination, design and delivery of training interventions.
- Management of internships and apprenticeships - Management of school and university relations
- Tutor apprenticeships

Massimo Marchesini founded Marchesini Group S.p.A. in 1974 in Pianoro. The company has transformed over the years from a small local business producing key components for automatic machines to a large industrial enterprise. The achieved multinational dimension has never betrayed the human spirit and artisan production approach of the origins, which coexist today together with the latest innovations in robotics and digitalization.

Participant 3b has worked at CNS (National Consortium of Services) in Bologna for 5 years in the area of Cooperative Development and Services - Training - Human Resources Development. CNS is a consortium of cooperatives specializing in the provision of services. On behalf of its members, it participates in public and private tenders, acquires contracts and orders for the provision of services, and enters into contracts with principals. It coordinates member companies to ensure proper performance of contractual services. Provides support to members to improve the quality of services and business organization.

Participant 4b is an employee of the Lai Momo Cooperative in Bologna. Lai Momo is a social cooperative active in the areas of immigration, social communication, intercultural dialogue and development. The cooperative consists of only a few people; employees have different tasks: research, digital communication, language education, cultural animation and event organization, project writing, editing and publishing, graphic design, cultural mediation, ethno-psychological supervision.

Participant 5b is the Training and Academy Manager at Coop Alleanza 3.0 since 2009, she is mainly responsible for:

- Selection: for all head office roles and for managerial or specialized store roles
- Management of internships, apprenticeships and disability placement
- Potential assessment and career progression
- Training: planning and macro-planning of trade and mandatory training.
- Intranet and Training Portal: Content creation and management of the Coopedia portal, a website reserved for all employees with training (FAD), information and social purposes

Coop Alleanza 3.0 is the largest cooperative in Italy, part of the Coop System, which brings together 94 consumer cooperatives. With nearly 400 stores and over 19,000 workers, it is present from north to south in nine regions: Friuli Venezia Giulia, Veneto, Lombardy, Emilia-Romagna, Marche, Abruzzo, Puglia, Basilicata and Lazio.

Participants 6b and **7b** work at Reggio Children - Loris Malaguzzi International Center. **Participant 6b** has been in charge of communications since 2007 and is in charge of communication policies and coordination of special projects. **Participant 7b** is Training/Consulting Project Coordinator and is in charge of coordinating Area Italia's production activity and new product development.

Reggio Children is a company that was founded in 1994, composed of 30 members, offers training courses on the Reggio Emilia Approach® in the short, medium and long term, aimed at teachers, teachers, educators, students, professors, operators and anyone interested in school and education issues.

Participant 8b is an Italian L2 Teacher - Socio-cultural educator at "Opera di Padre Marella" since January 2022. He is a teacher of Italian L2 didactics aimed at foreign adults and minors.

His task is the first and second literacy of students as a facilitator. His teaching role is contiguous with that of a socio-cultural educator with educational coordination skills in the school sector and asylum seeker reception.

Opera Padre Marella currently conducts 11 facilities in the territory between Bologna and Ravenna including: reception centers, foster homes and therapeutic communities that respond to the different types of social exclusion present in the territory. Today, the Opera's different houses host more than 300 people, who are constantly assisted and followed with the intention of reintegrating them into the social context.

Participant 9b is the Vice president of AlmaVicoo and from 2019 manager of the innovation area at Legacoop Bologna. Legacoop Bologna is the representative association of cooperatives, businesses and entities in Bologna that are members of the National League of Cooperatives and Mutual Societies. It is a provincial articulation of Legacoop Emilia-Romagna.

4.2 Step Analysis

This section is created upon the following queries:

- What steps, plans or instructional models do you follow when designing a training course?
- Which are the most important?
- Which are the most complex?

In Ireland, participants listed the following specific models that are used in their course development and teaching practice: Enterprise engagement, Content mapping, Bloom's Taxonomy, ADDIE, Gagne's Nine Events of Instruction, Kirkpatrick, Andragogy Knowles, Experiential Learning, TNA, SAM, UDL, and Backwards Design. Moreover, some participants use their own model and/or buy materials. ADDIE was elected as the most important model, encompassing all its phases (planning, content and design, analysis and evaluation and stakeholder engagement).

The most complex steps in course development are related to course structure, design, marketing/course information, research and planning, as detailed below:

- Course structure
  - Getting the content flow right (for content, level of learning, delivery method)
    - Module development and sequence
    - Avoiding overlap
    - Keeping it at the intended level
    - Logical order/flow and incorporating different modalities for the different learning styles
- Course design
  - Effective learning objectives.
  - Interactive learning / interactive design.
  - Learner engagement.
  - Content scripting.
  - Creating exercises that help show how the learning can be applied.
  - Accommodating for all types of learners.
  - Keeping the content interactive and engaging for the learner.
  - Developing competency-based assessments.
  - Creating interactive knowledge checks to suit both online and in person training.
  - Visual design / appropriate visuals.
  - Development and review.
  - Evaluation.
- Marketing/course information
  - Succinctly articulating the programme deliverables in a brochure.
- Research and planning
  - Research with SMES and carrying out a critical mistakes analysis. This is the most important step as it identifies when learners will use and apply the knowledge, the potential mistakes a learner may make when attempting to carry out the task etc.
  - Probing of client to get the right information from them to identify exact gap/need.
- Other
  - Proof of skills for soft skills.
  - Assess and design.
  - Analysis.
  - Evaluation.
  - Time and budget.
  - Delivery and evaluation of impact.

4.2.2 Spain

In Spain, participants use the Needs-Assessment-Development-Evaluation for course development, which may include consultation with experts if necessary. As many courses are already designed in terms of objectives and content, respondents observe how key it is to perform a series of analysis, including: learning strategies, evaluation methods, and profiles to which the course is directed. Some participant experts state that they previously study the training offer, while others are concerned with the promotion of the course.

Participants classify a series of steps as the most important ones for course development, as follows:

- Analysis of training needs.
- Adaptation of the contents and evaluation methods to the profile to which they are directed.
- Identification of barriers and proposal of solutions to strengthen their interest in training, avoiding dropouts.
- Choice of learning objectives, definition of effectiveness evaluation criteria.
- Identification of practical applications.
- Given the increasing demand (for courses), platforms must be inclusive, open and adaptative.
- Review of the contents at least annually.

Moreover, participants commented on the relation between facilitator and student: "Do not spend more than 24 hours on responses to students", and equally important: "To find expert speakers who are capable of adapting the training to the context".

Furthermore, participants highlight the following steps as the most complex:

- The creation and standardization of content, as it takes a long time (including Scorm 1.2 standards)
- Criteria for evaluating the effectiveness of training and the transfer of what has been learned to reality (assessment tools)
- The implementation of a sales system that converts customers.
- To know the profile of the attendees and the complexity of adapting the contents to the characteristics of the students
- On the digital part, what is complex is the development of online dynamics. It's hard to keep people's attention on the screen.
- The different digital capacity of the people who sign up, heterogeneity of levels.
- The challenge is monitoring and tutoring, also the dynamization of forums and creating a community despite distance.

Yet according to one participant, "one of the most difficult things is to make the person in front of you understand that indicators are necessary to assess the course".

4.2.3 Sweden

Swedish participants in their majority adopt blended learning models, followed by near one third of participants who use an online model to structure their practice. The adopted steps delineated by the participants are, as follows:

- Subject

- Target group
- Purpose/ Goal
- Content
- Methodology, Tools
- Time Schedule
- Environment
- Implementation
- Results
- Evaluation

And another n-step model below:

- Decide LMS
- Develop the course goals
- Develop course structures
- Develop the weekly or unit goal
- Orientation - select instructional materials
- Prepare course plan
- Customize weekly learning activities, independent work, or group work
- Develop assessment and grading policy
- Draft discussion questions and position any form of written assignments
- Check availability

Participants also cited ABC learning design[8] and "Allan Carrington's pedagogy wheel" used as inspiration. Moreover, models included the performance of environmental analysis, goal setting, activities, and examinations. One participant uses "the syllabus and the curriculum for adult education as a foundation for the courses (…) a relevant textbook (…) and online tools, such as Kahoot! and Quizlet".

When asked to point out the most important steps in course development, participants stated, as follows:

- Course production and the choice of learning activities.
- The syllabi and the curriculum for adult education;
- Feedback from students, interactive group work, clear written assignments.
- Target group, methodology and tools.
- Create community.
- All steps are equally important, as they are connected (constructive alignment Biggs 1996).

In terms of the most complex steps in course development, one participant states that "education is complex and difficult and sometimes it doesn't turn out the way you planned". Another respondent observes the role played by COVID-19 pandemic, as displayed below:

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[8] https://blogs.ucl.ac.uk/abc-ld/

In addition, other complex issues highlighted by the participants include the optimization in the use of the platform, which is many times hindered by a lack of IT support. The syllabi and the curriculum for adult education, time schedule and learning environment were also mentioned as well as creating a community and "knowing if (the course) is at the right level". Further on, participants considered that creating the course structure can be challenging – specially working alone with all the steps – as much as the assessment of the students' oral and written assignments, the use of the "appropriate" tools due to educational needs, and the design of a course in a simple/rather very clear way.

4.2.4 Italy

In order to structure effective training, one participant believes that it is necessary to initially carry out an outline design that includes needs analysis and market analysis then proceed with a detailed design that involves the cohesion of several dimensions: content characteristics, teaching strategies, formats of distance learning, and the verification and certification systems. Good design, for participant 5a, can lead to good educational outcomes, as follows:

- Objectives
- Purposes.
- Modules
  Content
- Duration
  Verification system
- Output

The above however it is often not done properly, as it requires a lot of effort and definition of very precise steps.

As to another participant (QUADIR), courses and trainings are conducted in a customized manner, based on the client's needs. Training design is structured in conjunction with the trainer. Their client companies, despite having taken advantage of distance learning, prefer to conduct classroom training; consequently, the design varies depending on how the courses are taken.

4.3 Deepening content, tools and materials

This section is created upon the following queries:

- Which learning environments and tools do you use for your teaching (LMS, OER, MOOCs, books, etc.)? In which delivery modes (online, in-presence, blended)?
- How is content acquired and constructed (market, self-production, mix)? Which formats are prevalent and why (video, text, etc.)? Is content released under a particular license? Is content usually updated?

4.3.1 Ireland

In Ireland, the use of learning environments is displayed in Graph 1 below:

83% (24)	31% (9)	28% (8)	38% (11)
Learning Management System (LMS)	Open Educational Resources (OER)	MOOCs	Books

34% (10)
Other

(62)
Responses

Graph 1: Learning environments and teaching tools

A series of tools to enhance learner experience include Menti, Turnitin (for assessment), Zoom, LMS, iMovie, Final Cut Pro, Storyline, Kahoot, Camtasia and one own training platform, where Articulate 360, Vyond animation tools, and Adobe Photoshop are the most used. Irish participants acquire and construct course content as per Graph 2 below:

52% (16)	**29%** (9)	**74%** (23)	**0%**
Self-produced materials	External market providers	Client-supplied or client-led (Subject Matter Experts)	Other

(48)
Responses
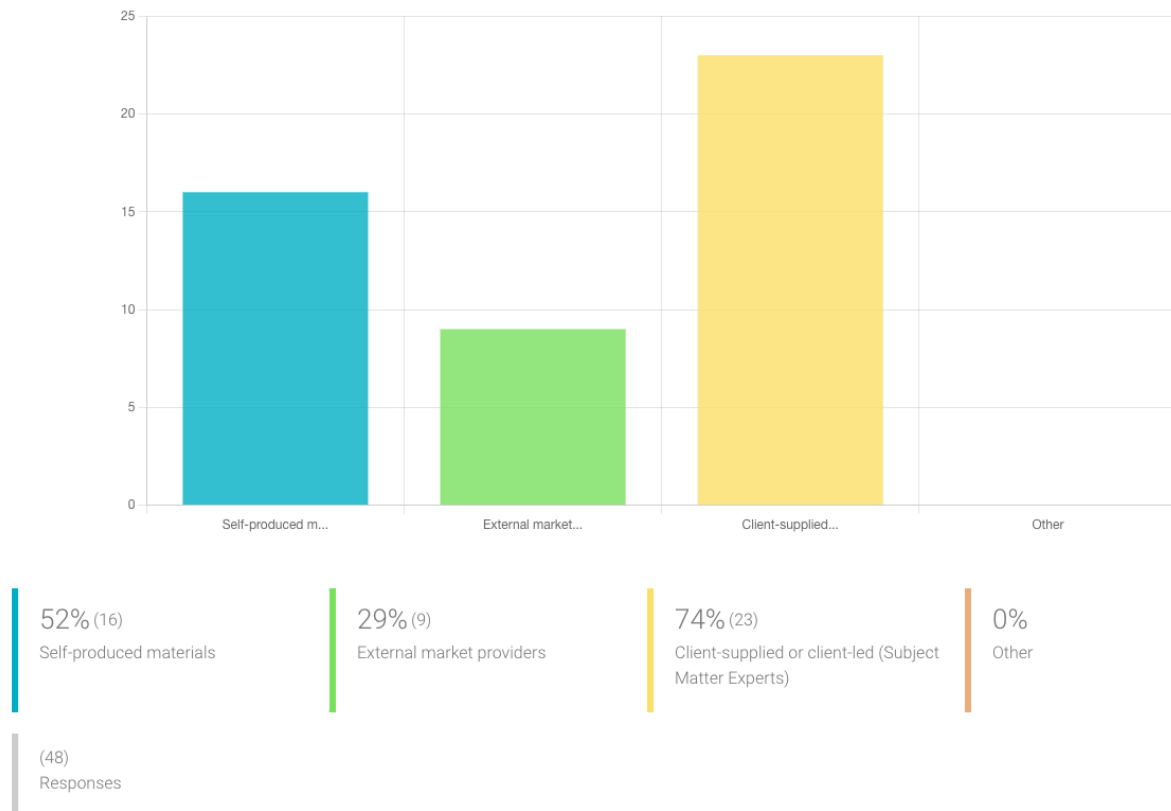
Graph 2: Content acquisition

Content is released under a specific licence for 50% of participants, and is regularly updated by 84%. Moreover, the most commonly used file formats in the participants' digital training courses are: video, PDF, audio / mp4, PNG, images, text, PowerPoint, Storyline, Word, toolkits, podcasts, articles, online guides and instructor-led live video (Zoom, etc).

4.3.2 Spain

In Spain, the adopted learning environments may be online (84.6%), face-to-face (84,6%), hybrid (61,5%) or distance learning (15.4%). Equivalently to the Irish context, Spanish participants' use a wide range of learning environments and teaching tools, such as LMS, Zoom and Google Workplace. The complete list of used resources is, as follows: Virtual Classroom, Physical Classroom, Creation of SCORM packages (use of iSpring, ExeLearning software), video editor, graphics tablet, Microsoft Word, books, Office suite, METAPLAN, Jam, Kayabi, and BigBlueButton videoconferencing system (integrated into Moodle).

Furthermore, content is self-produced (69.2%), external market provided (30.8%), acquired from collaborators (69.2%), or a mix of all (23.1%). Contrary to the Irish data, content is released without a specific licence for over 50% of participants, and is regularly updated by over 60%. As much as in Ireland, the most commonly used file formats in the participants' digital training courses are video and text along with interactive activities, such as online tutorials, reinforcement interactive activities, content extension, videoconference, platform activities and SCORM packages.

4.3.3 Sweden

In alignment with the Irish and Spanish context, in Sweden, the learning environments are created through the use of LMS, OER, MOOCs, books, Quizlet, and Kahoot!. The great

majority of participants use learning platforms, open learning resources from the internet, videos, illustrations and self-produced learning resources. In relation to the use of a specific model for course development, participants observe that it is key not only to routinely work according to common web standards such as World Wide Web Consortium, but also to follow procedures such as the Web Content Accessibility Guidelines (WCAG) in order to make the material accessible to students with different conditions and needs. In addition, participants may use their own model or even develop training courses with the help of course managers.

For the majority of participants, course content is formed by a mix of external products and own production; content materials acquired from external partners and textbooks were also mentioned. The prevalent formats of those material are webpages, videos, word processing files and printed material, including digital case reports, quiz modules, PDF and other digital components, books and databases. One participant offers the introductions to the learning platform in paper format and then html, video, quiz modules, illustrations, office files and pdf.

Participants justified the variety of used formats, as shown below:

- Word processing files are flexible and used in many ways.
- Hypertext markup language is flexible, fast with updates, and easy to integrate video and illustrations.

Content is usually updated by the person who created the course, but other actors, such as organizational members and external partners can also perform this task in the minority of cases. As to the content release under a particular license: it may be used freely by other teachers at the school (over 30%), the course material may be free for everyone (over 25%), or Creative Commons labelling with various restrictions apply, such as CCBY and copyright protected (40%).

4.3.4 Italy

A few Italian organisations have their own e-learning platform and have observed the required adaptations in the delivery of training due to COVID-19 pandemic, which appear as a contrast to the previous national contexts where externally provided LMS is the norm and no mention to the pandemic is made. In relation to the learning environment and course content, the results of the first focus group are presented below:

The Emilia-Romagna Region uses its own e-learning platform, SELF. SELF is also used by 140 Italian public organizations. The design of the courses in the SELF catalog has been entrusted to external entities; the courses are used by the Emilia-Romagna Region and offered to the 140 member organizations. The contents of the courses are previously defined and range over different thematic areas, they have a transversal character so that they can easily adapt to the different realities from which they are enjoyed. The catalog of courses used by internal staff of the Emilia-Romagna Region is designed primarily by internal staff so that it can respond to the actual needs of the company. The two modes of design are not different in quality at meet different standards and canons.

IFOA does not have an internal platform, course design varies according to Budget. Specifically, based on the Project Budget, it is decided who to approach for design and training.

QUADIR does not have its own/specific platform. Courses and trainings are conducted in a customized manner, based on the client's needs. Training design is structured in conjunction with the trainer. Their client companies, despite having taken advantage of distance learning,

prefer to conduct classroom training; consequently, the design varies depending on how the courses are taken.
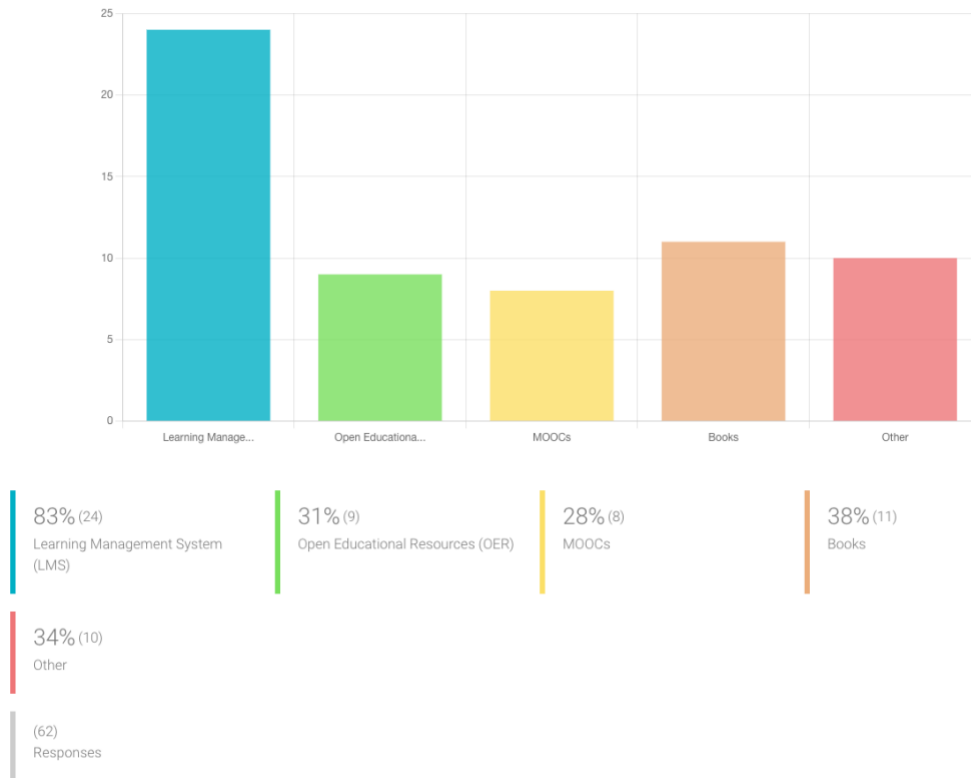
ECIPAR does not have its own platform, they were using their own platform in 2007 only for mandatory training (Safety, HACCP, first aid..) but decided to discontinue it in 2010, preferring classroom trainings. With the arrival of the pandemic (COVID-19), they started to conduct distance learning courses again, mainly entrusting the design to their faculty. CNA is considering including an advanced technology system for distance learning in their package/catalog. Their customers still prefer classroom training.

Giunti has its own platform. In the participant's opinion, in order to structure effective training, it is necessary to initially carry out an outline design that includes needs analysis and market analysis then proceed with a detailed design that involves the cohesion of several dimensions: content characteristics, teaching strategies, formats of distance learning the verification and certification systems. In-house, content is developed by experts in the field, the publisher is responsible for unifying all products created by graphic designers, video makers and experts related to that course.

Pandemic - COVID-19, two main needs emerged:

- Quickly transform training done in-presence online
- Support trainers on bureaucratic and technology use issues.

Scuola Centrale Formazione do not have their own platform because they provide their customers with technological support on the platforms that they themselves use. Before the pandemic (until 2019) they mainly worked on the creation of technological content that trainers could use in the classroom later, during the first months of the pandemic they decided to train trainers on the use of e-learning platforms so that they could provide distance training. For their client companies they have decided to create basic courses, which can be useful to all realities and additional courses.

Moreover, the second focus group participants stated, as follows:

Marchesini Group S.p.A. is equipped with an in-house LMS (learning management system), the platform has been integrated to provide for the company's needs from both an organizational/didactic and content perspective. The content is developed in collaboration with the technicians/teachers due to the business needs, currently they are working on an augmented reality project accessible to all employees via their device.

CNS mainly uses two platforms, one dedicated to training internal staff that includes final evaluation forms and one for training their associates/customers. In 2020, they decided to integrate the platforms they use by including the material produced during the trainings/upgrades to ensure their use by employees and their clients afterwards. The training they deliver is conducted both in the classroom and online (mixed mode).

IQC has its own platform, nevertheless, they use a blended mode of training delivery. During the training, their employees/clients are asked to represent what is learned, the results are transmitted via Digital Badge and are visible to all those who work at the facility.

Reggio Children - Loris Malaguzzi International Center have decided to implement an existing e-learning platform, adapting it to their needs. The content of their trainings is created in-house and alternate between synchronous, asynchronous and in-presence training moments.

4.4   Insight into the target/inclusion analysis

This section is created upon the following queries:

- Do you consider aspects of inclusion (UDL, inclusive language, interculturality) and accessibility (adherence to international standards) when designing? how?
- Are there policies that you must follow?

4.4.1 Ireland

In Ireland, over 90% of the sample require some level of inclusion and/or accessibility. This encompasses: inclusive language, accessibility (i.e., Section 508), UDL, UX, ESL learners, ADA compliance, WCAG, and the use of plain English.

4.4.2 Spain

Within the Spanish context, inclusion is considered by the majority of participants (whether in terms of images or texts). This is particularly the case as part of the training in inclusion is to suit people with disabilities. Examples are: review of the wording of all documents, the use of ".srt" subtitles, contrast between colours, use of headings h1, h2, h3, and well-designed tables (so that they are easy to read with the screen reader), inclusive language (compliance with the SCORM 1.2 standard, subtitles, and the avoidance of colours that may create confusion for colour blind individuals). According to one focus group participant, "the inclusion depends more on the facilitator than on the platform. The facilitator is the one who will make the course more or less inclusive", which sheds light on the key role played by the trainer/facilitator to promote inclusion in the learning setting. Moreover, the use of multiple examples that are "close to the learners" is highlighted. One respondent refers to inclusion as an "adaptation of language and design", whereas accessibility is still "a matter of time".

In terms of the obligation to follow a given inclusion policy, over 66% of focus group participants state that they consider regulations regarding equality and inclusive language (as per SCORM standard) as well as the accessibility of their platform, complying with the WCAG 2 (Web Content Accessibility Guidelines) and W3C (World Wide Web Consortium) standards. Moreover, participants rely on the client to validate the inclusion in terms of text or video or images. The confusion made between inclusion and accessibility and the use of gamification and adaptive designs were also observed.

4.4.3 Sweden

Over 50% of participants do not consider aspects of inclusion such as the Universal Design for Learning. For those who consider inclusion elements in their training courses, the use is not systematic (one participant is planning to implement it, while another has an internal course on inclusion tailored for employees). The adoption of inclusive language when creating courses is considered by over 30% of the sample and not used at all by over 25%. The remainder of participants are planning on using inclusive language.

Moreover, interculturality is taken into account by over 25% of participants, whereas 40% do not consider it within their courses with the remainder planning to adopt it in the future. As one participant puts it: "(…) it is important not to assume that the person reading the material belongs to the same culture/cultures as you as the screenwriter. Including different cultures and mindsets from countries, religious affiliation and sexual orientation (is effective) to create

recognition". Another respondent was apparently confused with the meaning of interculturality, as they associate it with "disabled participants".

Issues of accessibility (or the adherence to international standards) when designing a course was considered by the totality of participants. Regarding the obligation to follow policy in course development, participants referred to the syllabi and the curriculum for adult education, as well as internal and external policies and regulations. The need to observe student-centred approaches was also noted.

4.4.4 Italy

The consideration of inclusion in the Italian context is examined below:

IFOA has no guidelines with respect to the topic. They were able to verify that soft skills teachers/designers are more sensitive to the issue of inclusion while those who deliver training in technical areas are less so.

ECIPAR does not have structured lines in this regard, in all the training courses offered, however, they try to respect this aspect. As with IFOA, the teachers/trainers also have different sensitivities depending on the topic they cover.

Giunti devotes a part of their course catalog to "special needs," inclusion is an integral part of their work. Their proposed courses provide teaching strategies and methodologies to provide appropriate teaching for everyone. Part of their publishing catalog is dedicated to activity sheets that can also be done online to adapt the information to the user's needs.

4.5   Insight on tutoring

This section is created upon the following query:

- Is there tutoring of trainees? What aspects does it focus on (organisational, didactic, technical, etc.)?

4.5.1 Ireland

Skills noted include:

- Soft skills
- Technical skills
- Sales skills
- Work-based learning/on-the-job training
- Organisational
- Coaching
- Leadership
- Management
- Didactic
- Academic / professional exams
- Customer service
- Language skills
- Life skills
- Personal development
- Employability
- Industry-specific

- Employment law
- OHS skills

Some respondents noted that the skills depend on the company or client.

4.5.2 Spain

Except for one respondent, all participants stated that there is tutoring of trainees in their organization. The modes in which this is accomplished are LMS, virtual classrooms, forums, chats, emails, online tutoring sessions once a week (and/or on demand), student follow up, and initial orientation. Tutoring sessions can be carried out in person, virtually or on the telephone. One participant explains below how the tutoring works in his organisation:

> *They are carried out through the BigBlueButton video conferencing system, integrated in Moodle, so that the people enrolled in the course have it on their calendar, and the day before they receive a reminder email with the date and time. In addition to video, it allows chat, screen sharing, documents, etc.*

The tutoring focuses mainly on organizational and didactic aspects. Depending on the need of the user, however, technical issues may also become the focus of the tutoring.

4.5.3 Sweden

In the Swedish context, all participants observe that there is tutoring of trainees and pointed out the existence of internal courses for employees. The tutoring of trainees focuses on organizational, didactic and technical aspects (100%).

4.5.4 Italy

Following the Swedish context, the Italian focus group participants also discussed the training of teachers/facilitators and made macro-observations on the use of technology during and after the pandemic. The results of the first focus group are displayed below:

IFOA's target audience is young and accustomed to using technology, so distance learning did not prove particularly difficult. Teachers, in contrast, had some difficulty getting used to the new training methods because they simply used the same programming that they used in the online classroom. This methodology is still used by many teachers who find online training only a tool to be used in emergency situations but prefer to conduct classroom lectures.

ECIPAR encountered the same problems as IFOA. To try to help teachers in distance learning, it required them to do very practical lectures so as to create more interaction with learners. Another problem encountered by ECIPAR are the online platforms offered by the market; they were not born as pedagogical tools, consequently they are not suitable for doing training with everyone. The transition to exclusive use of distance learning is still in progress, but to do so, the objectives and means to be used need to be better defined.

The platforms they use most at QUADIR are zoom and teams. The company is aware of the new approach to training that the company is moving toward, which is fast training that can be used anywhere, nevertheless, their clients prefer classroom training consequently, at the moment, they have decided to continue using a mixed mode.

La "Scuola Centrale Formazione" often works with European projects, consequently, it uses the frameworks indicated by the tenders proposed for basic skills and tgcom for education for the more technical structuring. Their association does not issue a final certification at the end of the training course, for those who request it they must carry out a project work that allows them to obtain the digital open badge. The first difficulty they have encountered with the health emergency (COVID-19) in their trainers is the approach that the latter have used. To support their clients, they have organized several technological creativity courses, so that they themselves could be innovative creators in their own work. The second difficulty encountered is the methodology, not all trainers have shown themselves willing to modify their method to adapt to the new technological methods, the "Central Training School" has organized courses where the trainers themselves were asked their opinion on the problem and what could be the solution, in this way they verified that, feeling part of the change, the trainers were more willing to modify their methodologies.

In the second focus group, participants' answers were, as follows:

Coop Alleanza 3.0 during the pandemic period decided to invest in training 1000 employees remotely, for those who initially showed difficulties with technological systems were supported by their more experienced colleagues.

Lai Momo Cooperative decided to give their employees the task of creating the content of the training courses to be delivered, the latter ranging widely depending on the users. To facilitate their users to use the platform they created tutorials sent on WhatsApp to each participant.

As to the work of Father Marella, it has never included distance learning courses. This happens as the users they target are people with great difficulties and have very special needs. The association is currently unable to provide them with adequate distance learning.

4.6 Insight into the monitoring/evaluation phase

This section is created upon the following queries:

- What tools and interventions do you employ to monitor course progress and improve the learning experience?
- What modalities, scheduling and tools are planned for the initial, formative and final assessment of the trainees? How is the effectiveness of the course evaluated?
- What are the key factors that determine / prove the success of a training offer?

4.6.1 Ireland

The tools and interventions used to monitor course progress and improve the learning experience are, as follows:

- Surveys (post-evaluation surveys, feedback forms, evaluation sheets)
- Verbal feedback
- Assessments
- Work-place visits to assess progress
- Attendance reviews
- Grade reviews
- Basic Learner Reaction
- Impact assessments (feedback from the company)
- Happy sheets at end of course

- Follow-up interviews
- Monitoring usage of online learning platform
- Forums
- LMS tracking of progress
- Exam results
- Quizzes
- Portfolios and learner feedback
- Decision points per lesson, end-of-module assessments, end-of-course assessment, and offline assessments.
- Tasks and task-related feedback
- Questionnaires
- Evaluations and observations by onsite managers
- Evaluations, testimonials and regular check-ins with trainees.

Similarly, participants exposed a series of modalities, scheduling and evaluation tools that are planned for the initial, formative and final assessment of the trainees (Word, Google forms, Moodle, Blackboard, MasterStudy Wordpress LMS, AssessTeam, Google Workspace, online quiz apps, gamification tools, Kirkpatrick's Four Level, Rise/Storyline questions). Furthermore, Survey Monkey is used for basic evaluation work, while SoGO applies to more complex Competency Assessment work.

Moreover, survey participants listed below how they evaluate the effectiveness of training courses:

Key themes include:

- Surveys, questionnaires and evaluation forms
- Assessment grades / exam results
- Follow-up meetings, interviews, focus groups
- Course participation rates
- Case studies and testimonials
- Post-training changes – application of learning, self-assessment, client/manager feedback
- Independent, third-party evaluations

The key factors that determine the success of a training offering were, as follows:

Key themes include:

- Business impact
    - Increased productivity
    - Employee retention
    - Job creation
    - Application of learning on the job
    - Behavioural change
    - Value for money
    - Sales turnover
    - Sign-up numbers for repeat courses
- Relevance of learning
- Assessment results
- Learning objectives are met

Further on, facilitators expose below a series of skills/competencies they need before creating a digital learning programme (blended or online):

Key themes:

- Technical skills
- Understanding/knowledge of audience / be able to identify training needs
- Good internet access
- Good interpersonal and facilitation skills
- Communication skills
- Design/visual design skills
- Instructional design skills (including storyboarding)
- Writing and editing skills
- Evaluation techniques
- Analytical skills (i.e., how to evaluate learner needs)

It is suggested that technical and instructional design skills are needed for all trainers/training designers for digital learning, but some skills vary based on the type of training – i.e., good communication, interpersonal and facilitation skills for running synchronous sessions, and good visual design and content skills for creating self-paced learning.

Below are the key themes emerging from the survey data on the competencies for digital training:

- Technology and software skills
- More confidence for digital training
- Graphic and visual design skills
- Instructional design skills (storyboarding)
- Design engaging, standalone content for self-paced learning

A lot of the feedback related to managing video-based training (synchronous or asynchronous), with skills ranging from technical (lighting and setup) to interacting with trainees through the digital medium. Skills required may differ based on whether the trainer is designing virtual instructor-led training or self-paced online training.

4.6.2 Spain

In the Spanish context, there are many tools and interventions used to monitor course progress and improve the learning experience. The most relevant examples are, as follows: the use of different plugins in Moodle (completion progress bar, completion status, configurable reports showing learners' activity), and user feedback questionnaires or self-assessment questionnaire supervised by the tutor (in this case, the test is done at the beginning and at the end of the course and two months after the course ends). Moreover, "lessons learned meetings", discussion forums, and personal interviews are used. Aiming at measuring the progress of a course, trainers evaluate a series of controlling parameters, such as the number of enrolees, the connection time, and the dropout rate (if it lasts several sessions). It was also flagged how important it is to have access to a platform with real-time information.

Furthermore, participants exposed a series of modalities, scheduling and evaluation tools that are planned for the initial, formative and final assessment of the trainees. Aligned with the Irish context, diverse online evaluation tools (Google Forms, Survey Monkey), questionnaires,

activities (personal meetings outside the course hours) and projects are used – where validation Beta groups can also be created. For formative assessment, the use of initial and final online questionnaires (Kahoot, Quizlet) as well as interactive activities (h5p, use of software such as iSpring, exe learning, etc.) are employed. For summative assessment, participants listed tasks/activities to deliver traditional type (answer exercises in Word) and SCORM exams created with iSPring or other similar software. Moreover, respondents use Initial Competencies Assessment (VIC) so that the learner knows their starting digital competencies, and those that they will acquire in the training. Aiming at certifying each of the training modules, Practical Learning Activity (APC) is also applied.

Given the distinct approaches among VET providers, one participant explains how evaluation works in their specific context, as follows:

In online training, it is the content itself that proposes different evaluation tests, such as evaluations that, when carried out by the students, are self-corrected and the note is shown in the student's file (…) or practical cases in which the student develops an exercise proposed and the tutor corrects and assesses it and it will also appear in the student's file. In addition to these two evaluation modalities, there are also screens with activities in the content itself, so that the students consolidate the knowledge acquired in the training.

Another respondent states that intermediate evaluations are mandatory, giving students access to the rest of the course. Furthermore, as for monitoring tools, they are usually deliverable activities and mandatory or voluntary participation in forums, debates and tutorials.

Further on, focus group participants listed how they evaluate the effectiveness of training courses, which resembles the answers exposed in the previous paragraphs. The use of virtual classrooms and of partial/final satisfaction questionnaires as well as attendance at face-to-face training sessions were highlighted. Additionally, participants make use of student retention and success rate, and overall, learner feedback is highly valued. Evaluations at the beginning and after the training to evaluate learners' performance are also considered. Participants explain how they evaluate the effectiveness of training courses, as follows.

All courses are evaluated through activities and tutorials. The evaluations in certificate courses are made formative and final (with small practices and activities) and a final theoretical-practical evaluation. If they are not certified, a project is drawn up to be elaborated and defended. Efficacy is evaluated through student questionnaires for feedback. Success is indicated by student attendance.

Focus group participants were also asked how their assessment of learning was different before moving on to digital learning delivery. On its majority, the digital learning delivery is seen as more difficult and inflexible. One respondent considers the digital mode "(…) much more difficult. The live response of people, the faces of doubt, raised eyebrows, frowns, etc... online there is no such source of information". Other participants are even more critical as to the nuances between online and face-to-face delivery:

There is no possibility for the students to ask questions about what they have not understood, for something to be explained in greater depth, or for them to use their experience and background to participate, add, and qualify what the teacher says.

It is not possible to check directly how they are learning, if it is clear or not, if they have grasped it or not (for example, with techniques such as the traffic light, from fist to five, exit tickets, mini- blackboards, post-it, talking to whoever is side by side, or by groups, etc.).

Furthermore, the shift from paper to Microsoft Forms is mentioned. For those whose area of teaching permeates digital skills, there was a consensus on how important it is for students to learn how to use digital tool in and for their learning.

4.6.3 Sweden

The Swedish context brings similarities with the previously shown ones. The tools and interventions used to monitor course progress and improve the learning experience are often built-in aids for progression in the learning platform, where trainers can see learners' results and participation in various activities, such as submission of tasks and participation in discussions, forums and online lectures. Remainder participants mentioned the use of LMS Canvas, E-portfolio and National Tests. Another respondent is fond of "practice tests every one to two months and continuous marking and feedback during lessons. Development interviews are also carried out. The students also take a final test when they are deemed ready to pass it".

Further on, participants exposed a series of modalities, scheduling and evaluation tools that are planned for the initial, formative and final assessment of the trainees. The majority of participants use a combination of formative and summative assessment, and the effectiveness of the course is evaluated through surveys after the course is completed.

The key factors that determine/prove the success of a training offer are: availability, quality assurance, positive evaluations, the survival of the course itself (as subjects can easily "disappear" in VET), balance between online and classroom teaching, and particularly the number of students who get jobs after completing their studies.

4.6.4 Italy

In what follows, Italian first focus group participants discuss how training trends are evaluated and whether or not they make use of initial and/or final evaluation tools.

For client companies, ECIPAR and IFOA use evaluation forms (designed with the university) both in progress and at the end of classes. For individual trainees who come to their facility to do training, they use monitoring systems created to meet national quality standards. During distance learning, the same exercises offered by the instructor are tools for verifying learning.

As to Giunti, in order to have a particular certification, they developed a monitoring system that includes: initial assessments, intermediate evaluations, final evaluations and monitoring of customer satisfaction. Giunti believes that a very useful tool at the end of a training course is follow-up but unfortunately it is a very difficult means of verification.

In relation to the second focus group, the answers to the previously stated query are displayed below:

Marchesini Group S.p.A. has included the evaluation within the training course as the last question addressed to the participants. It is mandatory for each person to answer to finish the course. The assessment is necessary for the purpose of obtaining the quality certificate that the company must possess.

Reggio Children - Loris Malaguzzi International Center has reasoned a lot in qualitative terms, which is why it requires participants to carry out a self-assessment and group evaluation so that results can be compared. Concretely, within each classroom (both online and in-person) a tutor is included who reports on each course, at the end of which a questionnaire of satisfaction is carried out by each user.

Pietro Ingrosso states that the tools used within the trainings are different depending on the topic covered during the training, while Coop Alleanza 3.0 subjects participants to a satisfaction questionnaire and a learning questionnaire. The only evaluation they fail to make is on the influence the training had on the employee.

4.7 Skills surveys

This section is created upon the following queries:

- For blended learning – what are the competencies or skills you found important for facilitators/learners to have when moving to online digital learning? How do these competencies differ from before when there was not such a need to deliver digital learning?
- For 100% online Learning – what are the competencies you would look for in the skills requisite for teacher/facilitator that would enable effective evaluation of the learning? How does your evaluation of learning differ from before moving to delivery of digital learning?

4.7.1 Ireland

In Ireland, over 40% of participants believe that their approach to learning evaluation changed through the transition from face-to-face training to online or blended learning. Similar to the other national contexts, facilitators have increased the use of digital tools, such as online survey apps (Survey Monkey, Google Docs; QR codes) and LMS. Yet, the use of online tools such as quizzes, data from LMS become factors in the evaluation and student progress and assessment completion are facilitated. More critically, it was mentioned that traditional evaluation materials have not been updated to reflect availability of online or blended learning. Another survey participant believes that "online learning evaluation tends to focus more on building awareness, knowledge and understanding rather than behaviour change".

For 100% online learning, participants observe a series of required skills, as follows:

Responses include:

- Technology and software skills
- Audience engagement
  - o Presentation skills
  - o Design
- Option for questions/feedback
- Effective assessment design
- Digital communication skills

- Organizational skills
- Skills to engage and motivate learners digitally
- Use LMS for interaction (for video-based learning)
- Instructional design
- Storyboarding
- Attention to detail
- Post-training follow-up
- No different to blended learning
- Unsure

4.7.2 Spain

In Spain, despite some participants affirming that their approach to learning evaluation did not change significantly through the transition from face-to-face training to online or blended learning, there was a consensus on everyone's need to adapt to technology. The advancement in the personalization of training was also mentioned.

Following the Irish survey results, participants state that for both the facilitator and learner, it is essential to master the LMS or platform used to deliver the online training and to have the minimum digital competence and devices, including internet knowledge. Skills and characteristics such as curiosity, creativity, dynamism, capacity to change, and passion were also mentioned. One participant summarizes it well, highlighting some characteristics of the transition from teacher centered to student centered, as follows:

> *(For facilitators) the main one is the change of role, they stop being the protagonist to be at the service of students and their needs. The second, the generosity to share knowledge and then the classics: communication skills, planning, organization, empathy and digital skills.*

There was an overall consensus on the need for enhanced digital skills and the tension of "being alone in front of the computer versus the relational energy of a face-to-face group". Participants believe that in digital contexts "it is more difficult to see how the students are doing and to adapt the content to the moment". Moreover, respondents highlighted the increased immediacy and speed in the preparation, exhibition and modification of contents on time as well as the greater effort in preparing material in order to prevent students from getting bored or disconnected. In addition, the digital transition was seen "just as a way" to adapt to macro scale societal changes, albeit constant motivation must be present in online training. Perseverance, and being methodical, responsible, and committed to the training were also noted.

Apart from digital skills of facilitators and learners, more focused competencies required for online teaching and learning are: instructional design, communication, change of role ("teacher stops being the centre to be the facilitator of knowledge"), mastery of LMS and other digital environment and tools. As one participant puts it:

> *In 100% online learning, the teacher must have a high level of digital competence, they must know very well the environment in which they teach, must be prepared to solve (and in a short time) the technical incidents of their students, must prepare content to measure for this type of*

It was also flagged that the challenge will always be to stay up to date and learn about new applications that make facilitators' job easier, helping them achieve their goal: "Be attentive all the time".

4.7.3 Sweden

Observing the transition from face-to-face training to online or blended learning in Sweden, participants made a series of observations in relation to the change of approach to learning evaluation. Following the results from the other national contexts, the required high level of digital skills of educators and learners was highlighted, ("IT maturity"). The need for "more support from the developers to the teachers" was also flagged.

Facilitators should not only be open to the "new format" but also understand that a different arrangement may be needed for it. Additional comments included some other requirements, such as the need of pedagogical skills ("pedagogical competence in general"), to be structured, to have imagination and a technical curiosity, the ability to work as a team and to "see technology as a bridge between educator and student rather than a wall". Besides the observed importance of management and organizational skills, facilitators should have the "courage to try new working methods and tools. Let teachers have the opportunity to use innovative pedagogical and didactic methods".

4.7.4 Italy

In Italy, when the target audience is young and accustomed to using technology, distance learning did not prove particularly difficult. Teachers, in contrast, had some difficulty getting used to the new training methods because they simply used the same programming that they used in the online classroom.

According to Giunti, Italians talk a lot about technology but make little use of it. With the arrival of the health emergency (COVID-19), they had to get organized and learn to use it much more; in terms of educational design this means stimulating cognitive thinking to create awareness that goes beyond the technology itself. This allows professionals to encode certain messages-metacognition-that are processed through digital tools and that go beyond how they work. Yet according to the participant, the generational change of learning, of continuing education, will force trainers to change the use of technologies and the strategies adopted. Adults often start designing training from the problem; as a result, we need to find the most appropriate strategy based on the media to be used. In designing, the important thing is to consider training as a means of creating stimuli and not net or absolute answers; the considerations developed at the end of a training course ensure active learning by the learner. In continuing education, the value dimension of the experience makes a difference; the design must be different depending on the target audience being addressed.

4.8 Insight into the experience

This section is created upon the following queries:

- What are the key challenges that you have encountered in using digital-based training?
- What changes would you make to improve the results of digital-based training?

4.8.1 Ireland

The key challenges encountered in using digital-based training were organized in themes, which include:

- Internet access issues
- Technology/software issues
- Virtual facilitation skills
- Gaining and maintaining attention / managing distractions
- Drop-out rates
- IT skills (for both learner and trainer)
- Learning engagement and participation / encouraging interaction
- Retention of learning
- Achieving long-term behaviour change

Participants were also asked about the changes they would recommend to improve the results of online or blended training:

Feedback included:

- Software/platform
    o Software and platform training
    o More education around digital technologies
- Internet access
    o Improve internet connection across Ireland
    o Individuals in rural Ireland struggle with their internet - that is the main thing that needs to happen
- Design considerations
    o Learner input on design
    o Visual design-first approach, content second
    o Microlearning / shorter, more targeted lessons
    o Pre-requisite training to attend a class
    o Post-training materials
    o More development time
    o More focus on designing to meet learning objectives
    o Mix of materials and content formats
    o User friendly
    o Adaptive or personalised learning / targeted and personalised
    o Varied content
    o Interesting and fun content
    o More interaction
- Quality
    o Professionally produced video
    o Employ skilled instructional designers
    o Better quality content/source materials from SMEs
    o Smaller, higher quality modules
- Learner feedback
    o Need more learner feedback to understand what works
    o Co-creation of content with learners
- Learner support

- o Ensure the trainer has the ability to easily identify learners that may be struggling and know how to support them virtually
- o Clear structure to support independent learning
- o Cameras on (synchronous video sessions)
- o One-to-one follow up coaching
- Blended
  - o It can't all be online – face-to-face is required
  - o Mirror the classroom experience is the goal. Keep the focus on the learner, with the digital element acting as a support to the learning, not the focus.
  - o Use of synchronous and asynchronous learning is better than one or the other

4.8.2 Spain

Participants pointed out the key challenges they encounter in using digital-based training, as follows:

- Student participation and attention
- Potential loneliness
- Time management
- New environment and applications in addition to making them attractive and less heavy or dense
- Low digital skills of students
- Not having direct contact with the student limits learning
- Dropout rate
- Find or develop a content editor that complies with the SCORM 1.2 standard to create content.
- Find or develop an LMS or platform that meets SEPE standards to homologate it and thus be able to provide Certificates of Professionalism
- Create a good sequence of exercises that reaches the students, it is therefore interesting to carry out a validation group in order to fine-tune the contents of that first edition. Whether it is going to be online synchronous or online asynchronous (validate the content before recording it)
- Expose learning objectives of the course
- Lack of time for the creation of content and activities
- Create online spaces for individual and group exercises

Furthermore, respondents would make the following changes to improve the results of digital-based training:

- Using more virtual classrooms in tele-training and flipped classrooms.
- Making greater use of tutorials
- Providing training to teachers for online monitoring, encourage participation through the revitalization of forums
- Offering a computer to people who do not have it
- Using short content cycles
- Biometric credentials to ensure that the training is carried out by the enrolled student.
- Periodic updating of training content.
- Reskilling for trainers in New Technologies.
- Gamification (whenever possible) and adaptation of evaluation tests
- More teamwork should be done

- Increase interactivity
- Constantly motivate and attract the attention of the students.
- More time to prepare and adapt content

Yet according to one participant: "In the subsidized online training, if students do not commit and complete the course, they would be penalized with the cost invested in their enrolment, since the training could have been taken advantage of by another really interested student". Another respondent critically states that "the trainers are considered mere transmitters of information. It is understood that they only teach, but they should have much more weight in the design of the course, knowing the profile of the students in advance". In addition, one participant suggested a previous session or tutorial on the use of tools so that students feel comfortable, and a mandatory presentation of the trainer and students to create a group before starting the course, "so that the digital does not replace the human".

4.8.3 Sweden

The Swedish focus group answers on the challenges faced in digital-based training are shown below:

- Getting teachers to understand that distance education requires you as a teacher to think differently (teachers need to be faster to produce digital education).
- Digital tools have different standards and there is often a high threshold to get started. Usability is low.
- That many teachers are afraid to digitize or think that you "must" digitize for the sake of it.
- When the learning platforms do not work
- Too much text-reading online, too long videos, too little variety in course design.
- To avoid dropouts
- Ensuring commitment and equal conditions in a digital context. Time to work on tasks and to manage functions in the learning platforms.
- Finding the time to learn more about it myself.
- The management must open up education

Moreover, one participant observes the "rigid conservative norms about what learning and development is and how it should be conducted. One must be open to new methods and be aware that technology opens new doors in learning". The observed suggestions for improvement on digital based learning were, as follows:

- More time for course development and adaptation
- Use 3M projection screen whiteboard film.
- Followed up teachers' pedagogical digital competence, (e.g. with the PDK cycle, a competence development model for pedagogical digital competence).
- Loan of own computers
- Work more with flexible learning on our teacher training courses.
- More interaction among the students as a good method to improve the results
- Increase competence in self-regulated learning and collaborative learning
- More teacher education about digital learning (internally and externally provided)

Furthermore, one participant suggests building courses "that can be reused and live on, preferably in cc0 license (…) as "it takes a long time to develop a digital course compared to having a teacher-led course".

4.8.4 Italy

Within the Italian context, the main challenge consists of increasing the use of technology in the VET sector, particularly in relation to the trainers' digital skills. It is also observed that the pandemic played a role in accelerating the process of digitalization across adult education in general.

The next chapter presents the concluding thoughts.

5. Moving Forward

Emerging from the dialogue established between the literature review chapter (Learning Models) and the empirical data previously presented, this chapter answers the research questions, therefore paving the way for the commencement of Result 2-related tasks. In what follows, the key components of online VET programs (design, implementation and impact of the training), the key skills in developing high level online training activities, and the consideration of diversity and inclusion in the VET sector are examined.

5.1 Key components of online offers: design, implementation and impact of the training

Despite the need of ongoing context-based adaptation to the digital learning realm, the research indicates an alignment of all partners with respect to the successful use of LMS, such as Moodle (as well as OER, MOOCs and books) and digital tools for learning (Zoom, Storyline, Kahoot, Camtasia, Jam, Kayabi, BigBlueButton, Microsoft Office, Google Workspace, SCORM packages). The course content observes the World Wide Web Consortium and the Web Content Accessibility Guidelines. Among the partners, there is a combination of self-produced- and externally provided materials and tools to facilitate learning that may not require a license.

According to the data from the four national contexts, most steps in course development can be classified as complex, such as tasks related to course structure, design, marketing as well as research and planning. Equally complex are: the choice of learning activities fitting the learners' profiles (assessment in general), low level of digital skills, the curriculum itself, and the creation of a community of practice. As one Spanish focus group participant comprehensively puts it: learning "platforms must be inclusive, open and adaptative". In addition, both learners and trainers should receive ongoing technical support, relying on a solid digital infrastructure.

The manner in which a VET online program is exactly designed, implemented and evaluated varies according to the national context (as per different resources and capabilities). However, all partners make use of a series of learning/holistic models as an inspiration and as guidelines to action, including prior planning with structural elements. Most importantly, the review of the learning models shows the pivotal role feedback loops play in the complete value chain as to the creation of VET online programs (student feedback is highlighted, albeit feedback from all educational actors is relevant, including from the trainers themselves). Ultimately, an online VET program should undertake ongoing review, as indicated by the learning models. ADDIE has been criticized for being too inflexible and too linear. In this way, SAM solves the problem of inflexibility: it is a simplified version of ADDIE designed to elicit feedback, improving the product in iterative loops. Similarly, the Kemp model's approach is circular, indicating the interdependency among all core elements. Moreover, as the Agile Methodology shows, VET programs must remain flexible despite following a given framework, which inevitably creates a tension between flexibility and rigidity. In a student-centred setting, trainers need to acquire/develop the capacity of finding a balance between agency and structure in light of the students' needs and other macro changes. For example, following the Covid 19 pandemic, there is an urgent demand to quickly transform training from face-to-face to online.

Emerging from the primary data (focus groups and surveys) and secondary data (the examined learning/holistic models), the creation of a holistic VET online program is represented below

by the "Agile-2-VET Holistic Digital Training Model" (Figure 11 below). It includes precise steps (design, implementation and evaluation) with a constantly open feedback channel. In a sense, a VET online program is an adaptive system, altering its components as a result of iterative feedback loops. The proposed model also reinforces the need for constant evaluation, a process in which all partners already thoroughly engage.
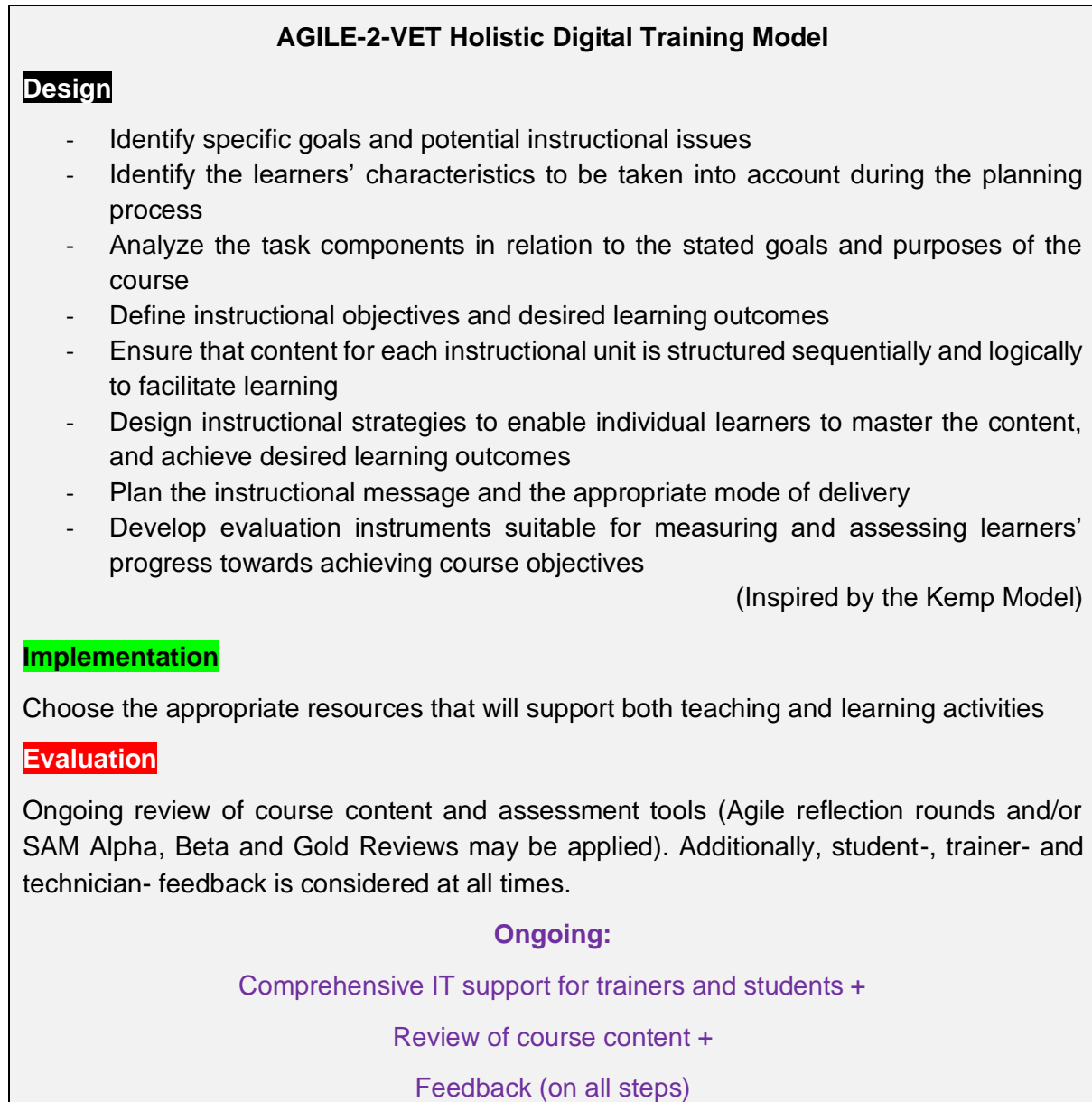

AGILE-2-VET Holistic Digital Training Model

Design

- Identify specific goals and potential instructional issues
- Identify the learners' characteristics to be taken into account during the planning process
- Analyze the task components in relation to the stated goals and purposes of the course
- Define instructional objectives and desired learning outcomes
- Ensure that content for each instructional unit is structured sequentially and logically to facilitate learning
- Design instructional strategies to enable individual learners to master the content, and achieve desired learning outcomes
- Plan the instructional message and the appropriate mode of delivery
- Develop evaluation instruments suitable for measuring and assessing learners' progress towards achieving course objectives

(Inspired by the Kemp Model)

Implementation

Choose the appropriate resources that will support both teaching and learning activities

Evaluation

Ongoing review of course content and assessment tools (Agile reflection rounds and/or SAM Alpha, Beta and Gold Reviews may be applied). Additionally, student-, trainer- and technician- feedback is considered at all times.

Ongoing:

Comprehensive IT support for trainers and students +

Review of course content +

Feedback (on all steps)

Figure 11: Agile-2-VET Holistic Digital Training Model

It is envisaged that the adoption of the model above will have a positive impact in bringing the key success factors of a VET online program. These include: increased productivity, employee retention, job creation, application of learning on the job, behavioural change, value for money, sales turnover, sign-up numbers for repeat courses, relevance of learning, assessment results, and achievement of learning objectives.

5.2 Key skills in developing high level online training activities

The adoption of a student-centred approach is observed in all national contexts in the form of tutoring of trainees, where all elements (organizational, didactical and technical) are taken into

consideration. As to the facilitators, the provision of continuous professional development (CPD) shows to be crucial. The need to adapt to the technology and to overcome its consequential barriers is a consensus among all partners. The observed difficulties are associated with the required digital infrastructure and the capacity to teach in and manage digital learning settings. Furthermore, research participants were asked to elaborate on how their assessment of learning was different before moving on to digital learning delivery. Particularly in the Spanish context, the digital learning delivery is often seen as complicated. To illustrate, one respondent considers the digital mode "(…) much more difficult. The live response of people, the faces of doubt, raised eyebrows... online there is no such source of information". Other participants were even more critical as to the nuances between online and face-to-face delivery, albeit recognizing the increased demand for online VET training. Pivotally, the way VET systems respond to digitalization is strictly associated with the former's success and even survival.

The key consideration is that much has changed in the transition from face-to-face to online delivery of training, opening space for a digital competence gap. Facilitators should not only be open to the "new format" but also understand that a different arrangement may be needed for it, which may bring difficulties (Swedish participant). With the pandemic, VET professionals were inevitably pushed towards a more comprehensive use of technology in teaching and learning, ideally "stimulating cognitive thinking to create awareness that goes beyond the technology itself" (Italian participant). The "new format" will require an augmented acceptance of digitalization, which would still not suffice to guarantee the delivery of high-quality online training. VET organisation must embrace digitalization in all levels, providing CPD in digital skills and communicating the (new) vision based on a digital world. It is envisaged that the acquisition of digital skills will allow for a progressive cultural change towards becoming digital: a real digital readiness. In the words of a Swedish participant: "we should see technology as a bridge between educator and student rather than a wall". The following quote summarizes what is required from facilitators in delivering online training:

> *In 100% online learning, the teacher must have a high level of digital competence, they must know very well the environment in which they teach, must be prepared to solve (and in a short time) the technical incidents of their students, must prepare content to measure for this type of training, must be able to quantify the student's work when it is not online, must seek a form of summative and formative evaluation (Spanish participant).*

It is suggested that technical and instructional design skills are needed for all trainers/training designers for digital learning, but some skills vary based on the type of training – i.e., good communication, interpersonal and facilitation skills for running synchronous sessions, and good visual design and content skills for creating self-paced learning. From the convergence of primary and secondary data, the key skills in delivering high level online training more broadly are, as follows:

- Digital skills (instructional design; visual/graphic design; hardware, application/ software skills)
- Organizational skills (communicating, planning, and organizing)
- Good interpersonal and facilitation skills (to motivate and engage learners)
- Analytical skills (to evaluate learner needs)
- Writing and editing skills
- Attention to detail
- Confidence
- Empathy

Ultimate Goal:

Mirror the classroom experience. Keep the focus on the learner, with the digital element acting as a support to the learning, not the focus

Figure 12: Key skills in developing high level online training activities.

5.3 Diversity and inclusion in the VET sector

Regardless of the adopted delivery mode, diversity and inclusion are key features of a high-level VET program. In Ireland, 90% of the survey participants require some level of inclusion (the use of inclusive and plain language, and the observance of Web Content Accessibility Guidelines and World Wide Web Consortium). This is corroborated by the findings from the Spanish context (where SCORM 1.2 standard is also considered). In Sweden, 50% of participants consider UDL (Universal Design for Learning), while 30% use inclusive language and observe "interculturality" issues. The suggestion on offering a computer to learners who do not have one was also flagged. Attention to diversity and inclusion is little in Italy, where there is an overall perception that "soft skills teachers are more sensitive to inclusion than those who deliver training in technical areas" (Italian participant).

The VET sector must act towards the promotion and strengthening of individual media competence, offering guidance and support in the use of digital media. This in turn enables greater social participation, increasing motivation to learn and improving knowledge acquisition through the use of digital media. The focus on the learners' needs is key. Following the Swedish context, the Universal Design for Learning framework can be used as part of an instructional design process, providing a structure to proactively design lessons that integrate inclusive strategies and options that can support all learners in the classroom (Meyer et al., 2014). The UDL principles are presented below:

UDL SEVEN PRINCIPLES[9]:

1. Fairness: usable by anyone

2. Flexibility: adapts to different skills

3. Simplicity: the use is easy to understand

4. Perceptibility: transmitting actual sensory information

5. Error tolerance: minimize risks or unwanted actions

6. Containment of physical effort: use with minimum fatigue

7. Sufficient measures and spaces: make the space suitable for access and use

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[9] See https://udlguidelines.cast.org

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Appendix 1

Focus group guide

1) Interviewees' characteristics: Name, Surname, Age, Gender, Level of education, Years of experience in the field of adult learning, Expertise in online learning

2) Sector: VET/educational institution/public sector/private sector

3) Position in organization: job title

4) Responsibilities of their role: where they are positioned in the learning process. design? development of content? facilitator and delivery? Evaluator?

5) Types of learning programmes: academic, apprenticeship, regulatory, soft skills […]

6) Training blended? online?: classroom and online? % breakdown - 100% online

Step analysis

1) What steps do you follow when designing a training course? (try to be as schematic as possible)

2) Which are the most important?

3) Which are the most complex?

* Deepening content, tools and materials *

1) Which learning environments and tools do you use for your teaching (LMS, OER, MOOCs, books, etc.)? In which delivery modes (online, in-presence, blended)?

2) How is content acquired and constructed (market, self-production, mix)? Which formats are prevalent and why (video, text, etc.)? Is content released under a particular licence? Is content usually updated?

Insight into the target/inclusion analysis

1) Do you consider aspects of inclusion (UDL, inclusive language, interculturality) and accessibility (adherence to international standards) when designing? how?

2) Are there policies that you must follow?

* Insight on tutoring*

1) Is there tutoring of trainees? What aspects does it focus on (organisational, didactic, technical, etc.)?

* Insight into the monitoring/evaluation phase *

1) What tools and interventions do you employ to monitor course progress and improve the learning experience?

2) What modalities, scheduling and tools are planned for the initial, formative and final assessment of the trainees? How is the effectiveness of the course evaluated?

3) What are the key factors that determine / prove the success of a training offer?

skills surveys

1) For blended learning – what are the competencies or skills you found important for facilitators/learners to have when moving to online digital learning? How do these competencies differ from before when there was not such a need to deliver digital learning?

2) For 100% online Learning – what are the competencies you would look for in the skills requisite for teacher/facilitator that would enable effective evaluation of the learning? How does your evaluation of learning differ from before moving to delivery of digital learning?

Insight into the experience

1) What are the most challenging difficulties that you have encountered in this type of training?

2) What improvements or changes would you make or introduce to improve the results of this type of training?