



C19 d-Response

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IO2: Methodology for online/distance/blended learning

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Introduction to the purpose

Upon the outbreak of the COVID-19 pandemic, most organisations, including those in the education sector, were not ready to adopt online learning programmes, following systematic approaches and actions. The d-Response project came as a response to the VET organisations' needs that were not fulfilled. Specifically, it addresses the preparation processes, to effectively implement online/blended learning during times of crisis. The current document is the second deliverable (IO2) of the project and provides VET institutions with organisational and methodological procedures to follow when implementing online/distance learning programmes, during periods of crisis. The aim is to equip the target group (VET providers, employers, teachers/trainers) with concrete guidelines on structuring programmes seamlessly, having business and education continuity when critical incidents appear. The document has the following structure and content:

Chapter 1 includes a theoretical framework where the most important terminology is described along with challenges and facilitators of online/blended learning as derived from a literature review. There are distinct case studies from all partner countries (Austria, Romania, Bulgaria, Cyprus, Germany, Spain) as an example of the challenges faced by organisations during the online transition and the respective solutions found. The chapter is finished with a core process on online/blended teaching and learning which outlines step-by-step what an institution needs to do to deliver effective programmes (both on an organisational and instructional level).

Chapter 2 outlines a business continuity plan accordingly to international business standards; a business impact analysis and risk assessment procedure that an institution can follow to address potential risks deriving from critical incidents.

Chapter 4 presents an education continuity strategy (both on an organisational and instructional level) that can be adopted by any institution to prevent challenges from disrupting their teaching and learning processes.

Overall, the document serves as a guide for any stakeholders interested in following evidence-based procedures to operate digitally, both under normal and crisis-related situations.



Chapter 1: Theoretical framework

Unit 1: Definition of terms

1.1 What is digital transformation?

Digital transformation refers to the implementation of “strategies [that] focus on the transformation of products, processes, and organizational aspects owing to new technologies” (Matt et al., 2015, p. 339). As a transformation procedure, it refers to all types of businesses, organisations, and units that aim to integrate new technologies, following the demands of the new society. To achieve this, it is highlighted that the whole strategy of a business/unit should be modified to fit the digital aspect; the models need to adapt and change as a response to the new reality (Reis et al., 2018). This may include changes on three levels: on the usage of the new technologies, as a method to achieve innovation, on the creation of new or modified values toward digitisation, and the definition of new structures in terms of organisation and planning of the new digitised activities, (Matt et al., 2015). These adaptations depend on the financial affordances of a business/unit. Similar to other methods, digital transformation can entail the following steps as proposed in the AIMultiple digital transformation framework (Dilmegani, 2019):

1. identify the **objectives** of the digital transformation. Are we aiming at digitising products or processes? Are we aiming at improving procedures?
2. design the **strategy**. Through which methods will we achieve the objectives set?
3. select the appropriate **technologies**. Which technologies will assist us in the process?
4. create a coordination, **leadership team**. Do we have a suitable team to lead us?
5. prepare the **staff** and establish a **culture** of transformation. Are we ready for this change?

This procedure involves important elements found in other common frameworks. In the education sector, the European Commission launched the European Framework for Digitally Competent Organisations, [DigCompOrg](#). The model comprises 7 key areas (Fig. 1), within an education organisation, on which digital transformation can take place:

- **Leadership & governance practices:** digital learning needs to be integrated and adopted by the higher levels, the leadership teams.
- **Teaching and Learning practices:** digital practices need to be integrated on the level of teaching and learning by adopting innovative pedagogies and cultivating digital skills.
- **Professional development:** development of staff needs to focus on developing their knowledge and skills to optimise the organisational procedures.
- **Assessment practices:** digital practices need to be implemented on the assessment level to improve the planning and provision of education.

- **Content & Curricula:** digitalisation needs to be followed by adaptations and modifications of the curricula and educational content, based on the capabilities and potential limitations of the digital resources and tools.
- **Collaboration & Networking:** the digital means can facilitate the establishment of positive and cooperative relationships among organisations for the improvement of the positioning in the market and the implementation of digital education.
- **Infrastructure:** the digitalised aspects of infrastructure need to support our aims and overall procedures while being the backbone of the organization.
- **Sector-specific elements** (e.g. ICT, languages etc.): many other challenges, needs, opportunities may emerge due to the specific characteristics of our sector or the cultural aspects that characterise our organisation.

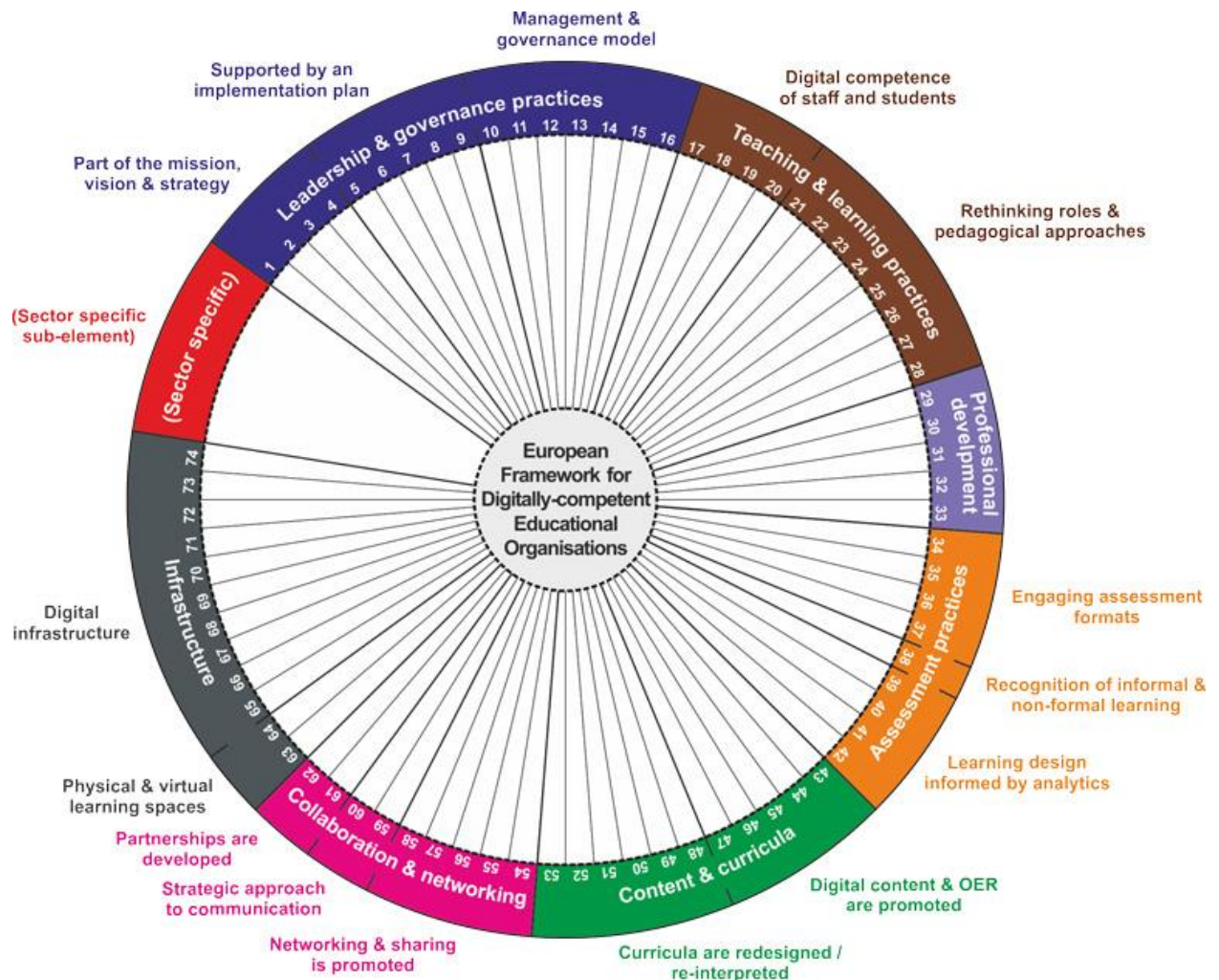


Figure 1. DigCompOrg Framework (Kampylis et al., 2015)

1.2 What is distance education?

Even though distance education expanded at the beginning of the 21st century, it appears chronologically much earlier: already from 1800 with the use of letters/correspondence (Saykili, 2018). The main issue that arose with this type of learning was the lack of mediate interaction (Courtney & Wilhoite-Mathews, 2015). Therefore, after 1960, distance education was focused on the available multimedia (e.g., radio and TV) to provide mainly one-way communication (Courtney & Wilhoite-Mathews, 2015). Similarly, immediate interaction and collaboration among the educators and students was missing or was extremely restricted (Simonson & Seepersaud, 2019). As a result, these types of distance learning presented a lack of pedagogical foundation.

With the appearance of computers and the Internet, synchronous and asynchronous communication was established through recorded or live teleconferences that created an interactive environment (Simpson & Anderson, 2012). It seems that emerging technologies influence the nature of distance education (Moore et al., 2011) and this might be one of the reasons multiple terms/definitions emerge and are used interchangeably (e.g., e-learning, online learning). However, distance learning is commonly defined as the type of learning experience organised and provided by an educational institution, (Simonson & Seepersaud, 2019), during which the teacher and the students are geographically separated and use digital technologies and the Internet to bridge this distance gap (Moore et al., 2011). This way it differs from any other type of self-learning based entirely on students' individual will (Sofos et al., 2015). In distance learning, flexibility is highly increased based on the time, place, and often pace of study. The most important differences between face-to-face and distance learning are presented in the table below (Table 1).

Table 1. Difference between face-to-face and online instruction based on their distinct characteristics.

Features	Face-to-face	Online
Time and place	Fixed	Variable
Interaction	Immediate	Needs to be organised to be provided promptly. The benefit of self-reflection.
Feedback	Immediate	Needs to be organised to be provided promptly
Dialogue	Usually, one	Multiple at the same time

Turn-taking	Structured, at fixed times	Needs to be organised
Speed	Usually, fast	Variable. Long breaks or interruptions might exist
Representations	Multiple (e.g., body language)	Multiple (e.g., emerging technologies)

1.3 What is online learning and e-learning?

E-learning and online learning are two terms that are often used interchangeably, among the different concepts for the online interventions that derived from the incorporation of new technologies. Many researchers state that it is difficult to use one universally accepted definition (Moore et al., 2011). On the one hand, the terms refer to the learning process during which physical distancing among the participants is evident and mediated by the Internet and digital means (Keegan, 1986). On the other hand, the terms refer to the learning process that depends on technologies but physical distancing among the participants is not a prerequisite (Sangrà et al., 2012). For this reason, fully online learning describes the type of learning that is supported solely by the Internet (Sofos et al., 2015) and this differentiates it from e-learning which is, basically, electronic learning that can happen even within a physical classroom.

To address the way technology is used and the level of interaction that exists in the learning process, Singh and Thurman (2019) propose the following definitions of online learning:

1. "Online learning is defined as learning experienced through the internet/online computers in a synchronous classroom where students interact with instructors and other students and are not dependent on their physical location for participating in this online learning experience." (Singh & Thurman, 2019, p. 302).
2. "Online learning is defined as learning experienced through the internet in an asynchronous environment where students engage with instructors and fellow students at a time of their convenience and do not need to be co-present online or in a physical space." (Singh & Thurman, 2019, p. 302).
3. "Online education is defined as education being delivered in an online environment through the use of the internet for teaching and learning. This includes online learning on the part of the students that is not dependent on their physical or virtual co-location. The teaching content is delivered online, and the instructors develop teaching modules that enhance learning and interactivity in the synchronous or asynchronous environment." (Singh & Thurman, 2019, p. 302).

The above definitions are the ones we have adopted for the creation of this document, too. Online courses can be part of a holistic learning programme or independent units that

someone can attend and complete. In both cases, the element of interaction is paramount. Interaction can have two broad formats (Klement & Walat, 2015):

- a. **Interaction between the human agents (participants) and the technology and content** delivered through it. This refers to the teachers/trainers' and students' engagement with the learning material and the digital means used to present it such as the various electronic resources (Sofos et al., 2015). Therefore, the learning content can be similar to the one integrated into face-to-face processes, for instance, case studies or problem-solving, but the difference is spotted in the way it is delivered and presented. Examples of interactive technologies are simulation and games (Klement & Walat, 2015), used in line with educational purposes.
- b. **Interaction among the human agents during which relations are formed.** On the one hand, this refers to the communication between the teachers/trainers and the students, for the construction of a relationship of trust, guidance, and support (Mouzakis, 2006). On the other hand, this refers to the interaction among the students for the co-construction of knowledge through effective collaboration (Klement & Walat, 2015). As a result of both, a virtual class and community are built, aligned with the social aspect of learning. Similar to the first type of interaction, technology and digital means are the medium for the interaction among the agents.

1.4 What is blended learning?

The earliest definitions of blended learning addressed the wide coverage of the term "blended". Driscoll (2002), referred to blended learning as a general combination and mixture of:

- various web-based technologies (e.g., live virtual classroom, self-paced instruction etc.).
- various pedagogical approaches (e.g., constructivism, behaviourism, cognitivism)
- various types of instructional technology (e.g., web-based learning) along with face-to-face instructor-led learning, to achieve an educational goal

Based on this, Cronje (2020) has proposed that blended learning is "the appropriate use of a mix of theories, methods and technologies to optimize learning in a given context" (p. 120). However, the most common definition narrows down the concept of "blending". With the consolidation of online technologies and the Internet, blended or hybrid learning nowadays refers to the learning process that combines face-to-face and online interactions in such a way that both complement each other (Hrastinski, 2019).

Based on this, there are various models of blended learning, presented in detail below. In these, the online part of learning may include:

- presentation and delivery of content
- individual learning
- collaborative learning and networking
- assessment and (self)review
- self-reflection
- supplementary material

The face-to-face part of learning may include:

- teacher-led lessons
- hands-on, problem-based individual or group learning
- individual learning
- collaborative learning
- laboratory tasks/experiments
- breaks/discussion rooms

Blended learning models

Station Rotation

This model requires the formation of learning “stations” through which students are circulated during the lesson, at a fixed time. The blended format means that at least one of these stations involves online learning. The others can be teacher-led, groups or pair-work learning. Due to its restriction in terms of scheduling (for the rotation), it is common in younger levels, e.g., pre-school or elementary school education.

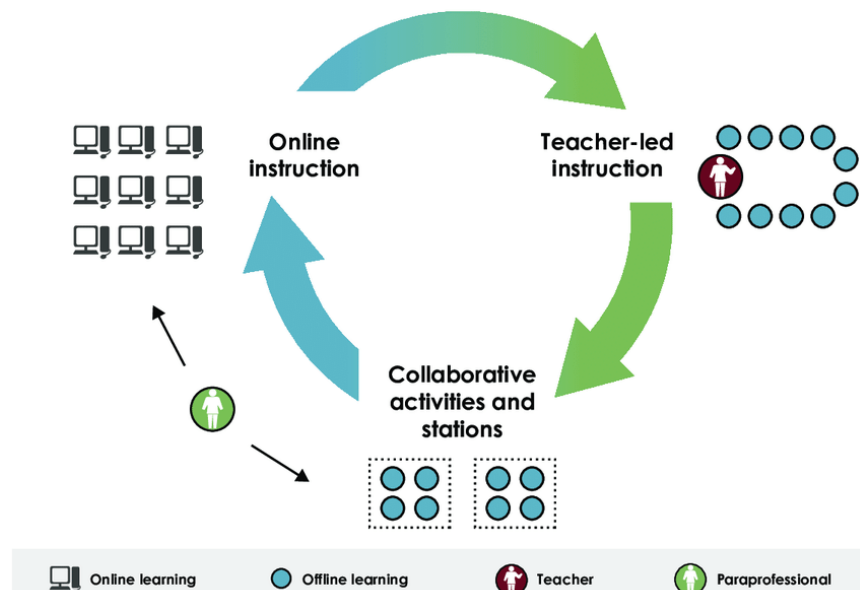


Image credit 1. The Station-Rotation model, © KIPP LA Empower Academy

Lab Rotation

Like a Station Rotation, it requires the formation of “stations” through which students are circulated during the lesson, at a fixed time. In this case, though, one of the stations is a computer lab, within the school premises, dedicated to the online part of learning (independent learning).

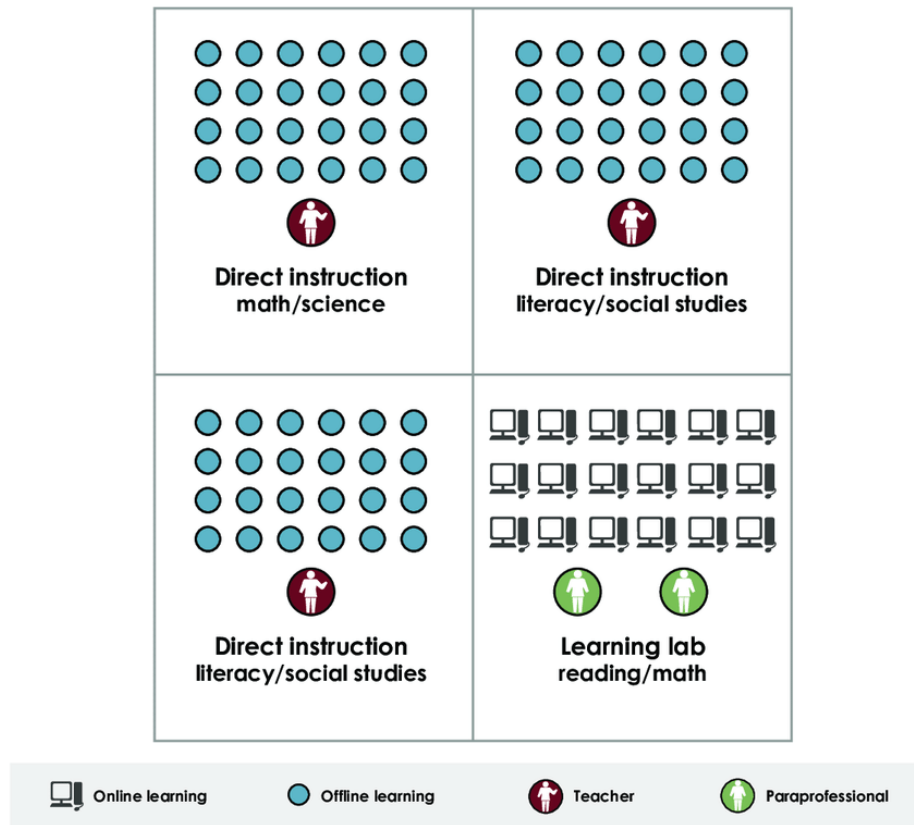


Image credit 2. The. Lab-Rotation model, © Rocketship Education

Individual Rotation

It resembles the previous models with one core difference: students do not rotate among stations at a fixed time. They can select the station that fits their needs (e.g., group work, independent learning, or teacher-led), based on an individualised learning plan, prepared. This way, we can accommodate learning to the students' pace.

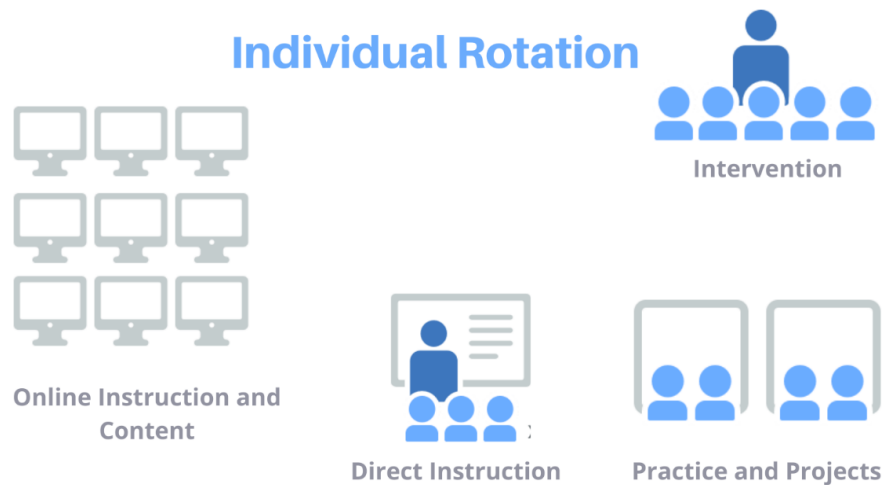


Image credit 3. The Individual Rotation model, © <https://stories.linways.in/top-5-blended-learning-models-6ea114b2816d>

Flex

As the name indicates, the model provides students with the flexibility to choose the type of learning they want to take part in. Online learning is the main study mode, and this differentiates it from the individual rotation model. Then, online learning is complemented by other types of instruction, based on any needs that arise.

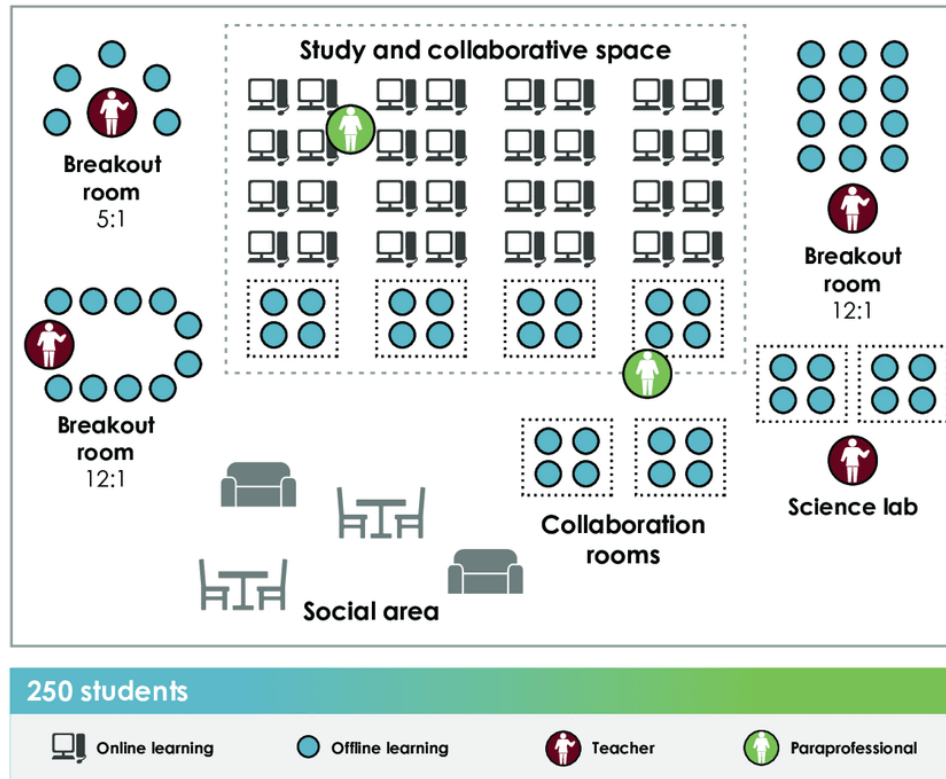


Image credit 4. The Flex model, © San Francisco Flex Academy

Flipped Classroom

This is one of the most common models integrated worldwide. In the Flipped Classroom model, students study online at home the required content, before an in-class session, so that during the next face-to-face instruction, in-depth practice can take place. This way the traditional role of the classroom changes from a place where new content is presented and learned (e.g., traditional lectures) to a place where the guided practice is incorporated for consolidation of knowledge. The activities conducted at home are a prerequisite for effective in-class attendance.

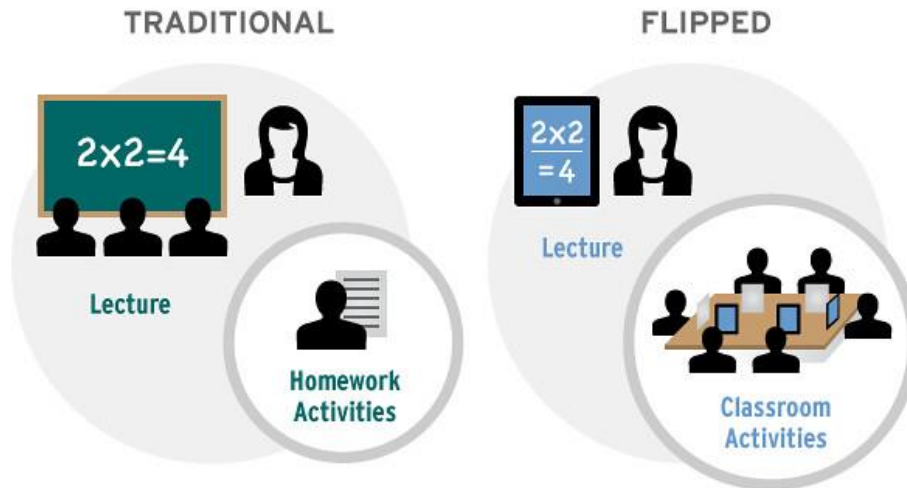


Image credit 5. The Flipped Classroom model, © Mikel Agirregabiria, <https://www.flickr.com/photos/agirregabiria/15320346415>

A La Carte

This model allows students to choose additional online courses to complement face-to-face instruction that regularly takes place. This is valuable when students need more individualised opportunities (e.g., preparatory courses, elective ones in another field) according to their needs.

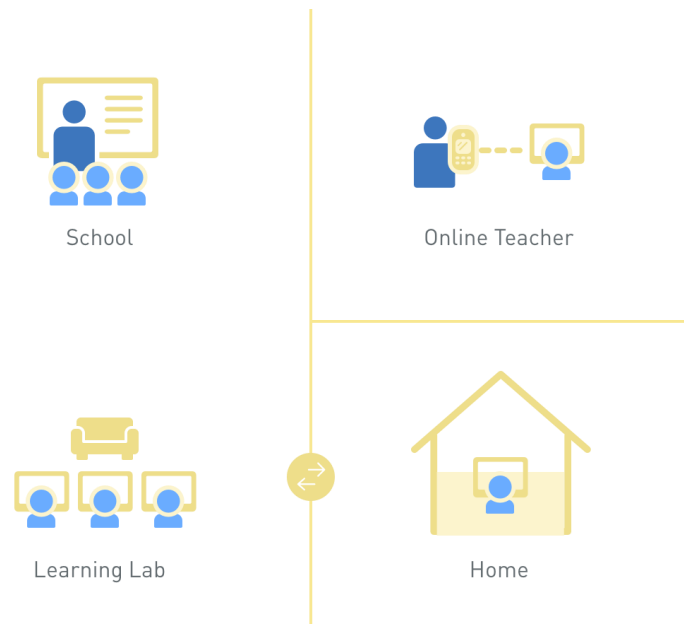


Image credit 6. A LA Cart model, © <https://elearningfeeds.com/a-la-carte-model/>

Enriched Virtual.

This model resembles a fully online learning experience. The students attend online courses, at home, in which some face-to-face lessons are added to provide opportunities for clarifications and exchange of ideas. These in-person meetings and classes can vary depending on the needs that arise.

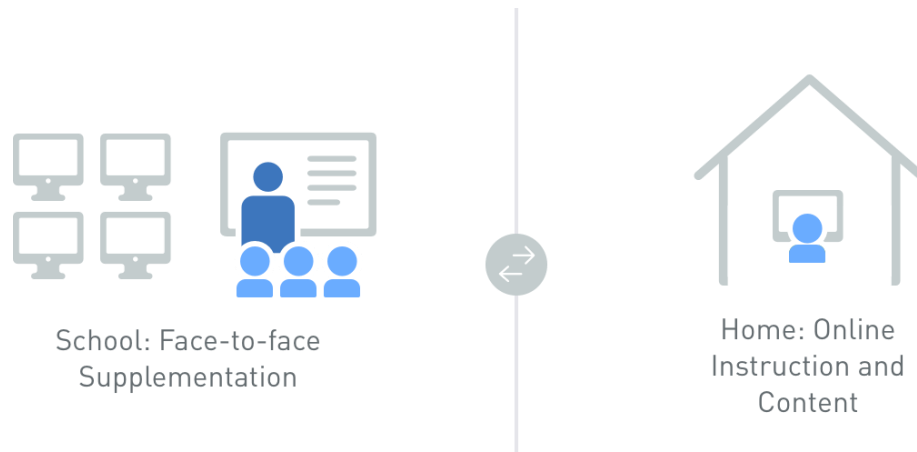


Image credit 7. Enriched Virtual model © <https://www.blendedlearning.org/models/>

Unit 2: Challenges and facilitators of online, blended, and distance education

2.1 Challenges and facilitators

To offer effective online/distance learning programmes, researchers highlight that it is a prerequisite to have **a systemic approach in place**. This is evident even in the case of emergency remote teaching, during the pandemic period. Systemic and systematic actions regarding a collective development of an action plan, based on national regulations and frameworks were missing (Nisiforou et al., 2021). Even when there were guidelines, they were often inadequate or unclear (Rodríguez-Muñiz et al., 2021). A strategic plan involves monitoring, reflection, and continuous evaluation of all the procedures followed. Moreover, the curricula and learning programs need to be aligned with the possibilities and restrictions of distance education. For instance, the content and material should be developed through appropriate means and formats (Nisiforou et al., 2021) while being user-friendly in the environment they are offered (Sofianidis et al., 2021).

The strategy should also focus on the provision of **adequate and suitable infrastructure** to support distance education. This includes having a stable Internet connection and ongoing technical support teams for all (Hall, et al., 2020). Educators expressed the difficulties they encountered during the emergency remote teaching period in terms of students' access to equipment. Access varied and depended on the type of devices students had, along with the extent to which they could use these devices (e.g., one computer/laptop in a household) and the Internet provision available (Trust & Whalen, 2021). Students of secondary level education coming from a higher social and financial environment benefit from fast Internet connections, adequate devices, and a quiet and suitable place to study at home (Sofianidis et al., 2021). As a result, they can participate in a successful learning experience. On the contrary, most students can access reliable devices, software, and communication tools. **Digital inclusion** in such terms needs to be ensured for all those involved (Nisiforou, et al., 2021), regardless of their background.

Furthermore, distance **learning experiences** should be designed in such a way that they exploit the potential of the online context. Given the fact that in online environments there is a lack of physical contact, students' participation, engagement, and motivation must be enhanced (Misirli & Ergulec, 2021). When teaching is focused on lecturing without any interaction, collaboration, and open discussion, students have difficulties in remaining focused for a long period (Sofianidis et al., 2021) relying on surfing the Net during lessons (Ferraro et al., 2020). Many students lack organisation, self-discipline (Thongbunma et al., 2021) and/or time management skills. As a result, they cannot organise their learning process through self-regulation of their progress. To ameliorate such problems,



teachers/trainers/designers should replace teacher-centred approaches with problem-oriented methods (Misirli & Ergulec, 2021) that support seamless asynchronous and synchronous communication (Saqlain, 2021). Examples of innovative pedagogical approaches are collaborative tasks, simulations, educational games, online laboratories and differentiated instruction (Sofianidis et al., 2021) where students' needs are at the centre of the teaching procedure (Karakaya, 2021). This involves the creation of an online learning community for inquiry and co-construction of knowledge. Alternative types of assessment (e.g., self- or peer-assessment, rubrics, and portfolios) followed by prompt feedback should also be in place to enhance student participation (Sofianidis et al., 2021). Students need to know in advance what is expected from them, having flexibility in the submission of assignments (Saqlain, 2021). It is rather unclear if such approaches were followed during the emergency remote teaching period.

Since distance learning requires the integration of digital tools, to achieve the expected learning outcomes, the participants need to be appropriately supported. On the one hand, educators should have effective **pre-service and in-service training** (Sofianidis et al., 2021) in the aspects of technology-enhanced and distance learning methodologies. Training should cover technical issues (e.g., knowledge of tools, technical skills), pedagogical concepts (e.g., learning theories) (Nisiforou et al., 2021) and digital competences, regardless of their age (Rodríguez-Muñoz et al., 2021). On the other hand, **students need to become digitally competent citizens** to learn and work in a digital era. For this, explicit training, guidance, and empowerment of students is required, regardless of their acquired knowledge and skills, to promote lifelong learning.

2.2 Case studies

In this section, we present case studies from all partner countries and namely the Austrian, Romanian, Bulgarian, Cypriot, German, and Spanish contexts, related to digital transformation and online/remote learning. The challenges, benefits and specific recommendations are outlined in detail.

2.2.1. Austrian case study

In Austria, a well-developed state-financed system of job orientation, qualification and insertion programmes has been in place for decades. These programmes are carried out by public and private training providers contracted by the National Employment Service - Arbeitsmarktservice Österreich (AMS). Participants are obliged to attend the allocated course if they want to qualify for unemployment benefits.

In 2020, 57.107 unemployed persons (of a total of 466.746 persons without employment) participated in labour market-oriented courses funded by AMS.



In spring 2020 due to the COVID-19 pandemic, accompanying official regulations and the first lockdown it became increasingly difficult to offer face-to-face courses. As a consequence, the AMS training was suspended as of 16 March 2020, later successively transformed into online learning offers (Auer, 2021). Some training institutes stopped offering courses altogether. Those labour market training providers which continued their educational activities were faced with several challenges about the participants:

- **Lack of equipment and broad internet connection** of many participants: This shortcoming could (partly be solved) by providing loan equipment (laptops, tablets).
- **Lack of technical IT and digital skills** of many participants. The only way to address this challenge was to offer ad-hoc learning units on basic user skills.

As a pre-requisite to providing online training, a range of practical issues had to be addressed within a short period:

- **Selection of adequate online conferencing tool.** The majority of training providers opted for Zoom, or, to a lesser extent, Microsoft Teams " (cf. Auer, 2021, and an informal survey among members of Plattform für berufsbezogene Erwachsenenbildung (plattform-erwachsenenbildung.at/), the umbrella of private providers of VET in Austria, of which *die Berater* is a member organisation). Critical criteria for this decision were:
 - Simplicity and usability for the participants
 - High stability and transmission quality
 - Wide range of functions, including small virtual gadgets
- **Selection of adequate Learning Management System:** a large number of training providers opted for Moodle, the most widespread LMS in Austria, especially in the education sector.
- **Selection of easy-to-use content production tools:** In reality, only a few trainers used such tools at all.

Even more challenging than the technological dimension was the **lack competences of the trainers**, which was hitherto not in the focus of attention, as labour market training had been predominately face-to-face. This lack concerned basic digital competence as well as **didactic and methodological competence** about **planning, organising and implementing online learning** offers. One 50+ trainer expressed the resulting loss of professional self-esteem and confidence drastically:

"The first four weeks with the start of the lockdown, I was in a state of shock, lying on my back and I don't really know anymore how I spent those days. Then I turned on

the computer and suddenly had the feeling suddenly had the feeling that I'd missed everything and couldn't keep up with developments." (Auer, 2021).

One response to this need for professionalisation was the introduction of EBmooc plus, a **MOOC offered by the Austrian Education Ministry** which provides **basic online teaching skills for adult and VET educators**.

Most training providers could not afford to wait for the MOOC and its completion by their staff but reacted quicker. *die Berater*, with 400+ staff and approx. 20.00 students per year one of the biggest private labour market training providers in Austria may serve as an example:

In spring 2020, 145 online courses had to be installed, 396 sets of learning content were produced, and 1946 online users were administered. To empower own trainers a range of internal **train- the trainer courses** were introduced in a newly developed Trainer Academy:

- Digital competence (4 modules)
- DigiCoach: Teaching online
- Zoom as a training tool
- Moodle-based learning in adult education and VET
- Interactive e-Learning with H5P in Moodle
- Learning and having fun with Kahoot

These internal training offers have been continuously delivered since that time, as it has become obvious that the online professionalisation of trainers is a mid-term process.

But despite these efforts and a notable increase in online teaching skills of trainers in labour market-oriented programmes in Austria, the success was limited. Although overall unemployment rose by 35,9% in 2020 as compared to the previous year, the number of persons in training courses decreased by 7,8%. One reason for this is that many training providers failed to master the digital challenge. Online learning strategies were fully successful in keeping target groups with low levels of education and/or low language competence involved in training. Nor could the more practical elements of VET programmes (labs, workshops etc.) be completely replaced by online offers. (Korecky, 2021). Nevertheless, it is obvious that the digital transformation process in labour market-oriented VET in Austria was triggered off and significantly reinforced by the pandemic.

2.2.2. Romanian case study

Up until March 2020, in the schools of Romania, the tools, platforms and applications that make e-learning and blended learning possible were not widely used. Of course, some teachers included them in their classes, especially those that were teaching history, geography, foreign languages, who could benefit from the added value of said applications



and platforms. One of the reasons was the **lack of know-how and digital competences** on behalf of the teachers, the majority didn't know how to use blended learning and e-learning tools. The other major reason was the poor technological equipment that was to be found in the schools. The Romanian school system was equipped for traditional, face-to-face teaching.

In March 2020 the pandemic and the installed quarantine forced the schools and teachers to find ways to continue the educational process. There were many solutions, 95% of the educators reached out to **online messaging applications** to keep in touch with their pupils¹. 90% of the teachers used **video chat or online conferencing platforms** and 80% used **e-mail**, too. 60% of the teachers did not use a dedicated e-learning platform and did not host synchronous educational sessions, only delivering the learning material to the pupils via a **messaging app or a storage platform**. One of the most popular platforms used in this period was Zoom, valued by the teachers for its ease of use.

However, between March and June 2020, there were identified several obstacles and factors that caused blocks and inequities in achieving educational goals and harmed the online education process: **unequal access to technology, to the Internet and the differences in the level of the digital competences of the teachers**². Research shows that between March and June 2020 40% of the children in Romania have not taken part in online education whether because the teachers didn't offer it or because they did not have **access to technology or the Internet**. For the upcoming schoolyear there were taken measures to minimise these, especially on two levels:

- **financial-logistic level:** schools were equipped with technology to ensure the basics for both blended learning and e-learning; children, who did not have devices were given tablets purchased by the state
- **curricular level:** with a wide offer of training for the teachers and educators to help them become familiar with technology and develop their digital competences³

On the 2nd of September 2020, the Romanian Ministry for Education announced in a press release⁴ that they closed **a partnership** with Google Education and Microsoft Teams, so that every school in the country could use these platforms free of charge. Most of the schools decided on the G-Suite, which includes a large variety of several tools. With the introduction

¹Velicu, Anca (2020)

² CNPEE (Ministerul Educației și Cercetării), 2020. Florian, Țoc, 2020, Consiliul Elevilor, 2020a, 2020b, Botnariuc, Cucoș et al., 2020

³ Săgeată, 2020, CNPEE, 2020, Florian, Țoc, 2020, Consiliul Elevilor, 2020a, 2020b, Botnariuc, Cucoș et al., 2020

⁴ <https://www.edu.ro/ministerul-educa%C8%9Biei-%C8%99i-cercet%C4%83rii-%C3%AEn-parteneriat-cu-google-%C8%99i-microsoft-pune-la-dispozi%C8%9Bie-%C3%AEn-mod>

of the new measures the percentage of children who could not participate in the e-learning process dropped to 18% by January 2021⁵.

With the start of the 2020-2021 school year, every school was ready in theory to switch from face-to-face learning to e-learning if needed. And after a few weeks, a new lockdown was installed, and the e-learning was implemented.

In Liceul Technologic „Székely Károly” the teachers had **a short training** in the use of G-Suite, the platform the management decided to use. Those teachers who had previously used e-learning tools and provided blended learning in the classroom were capable to adjust first. Those reticent towards technology struggled at first, trying and failing to transfer the traditional, face-to-face teaching methods into the virtual space.

The children needed training, too, although they seemed to adjust much easier. Once they learned the process of login, turning the camera and microphone on and off, finding and submitting tasks, they could keep up with the educational process. Most of the new tools and applications used by the teachers were welcomed by them, they were even more motivated by them.

All classes were held **synchronously** on Google Meet, following the school schedule, the sole difference was that the classes were 40 minutes long instead of 50 minutes. The teaching materials and tasks were **distributed** via Google Classroom. During classes, many of the G-Suite applications were used: Google Documents, Spreadsheets, Forms, Slides, Jam board and even Google Sites for organizing the teaching materials. Whiteboard applications (ex. whiteboard.fi) replaced the blackboard. Math and physics teachers used draw pads to explain and demonstrate. Many of them made short videos with the introduction of the new lessons, offering the children the possibility to watch again if they missed something.

The evaluation was also re-thought. Naturally, some teachers had the pupils write papers in front of the camera, those papers were later photographed and uploaded to Google Classroom. Some had oral exams. But most teachers used **various tools for evaluation**: Google Forms, Redmenta, Kahoot, etc., which made the **grading easier and motivated the pupils** to obtain a better score.

For keeping attendance, every teacher had his or her method, some checked the attendance and made notes, others used Chrome extensions that took attendance automatically, **keeping a record of the activity** of the pupils during class.

The biggest **challenge was the implementation** of e-learning in the professional field. The teachers were used to having the pupils in the workshop, working with them, giving them tasks, and watching them execute those tasks, correcting them on the way. A few initiatives

⁵ Rodideal Anda, Marinescu Valentina, 2021

were trying to demonstrate a work process and filming it, sharing the video with the help of YouTube, but it turned out to be a one-way process, only from the teacher towards the pupils. The **tasks** given to the pupils were purely **theoretical** (ex. describe a work process), had no practical traits, since the pupils didn't have the necessary resources at home to deliver more and were therefore lacking quality. They continued in this manner during the time of the lockdown, however, the teachers declared that it was a setback compared to what they could achieve in the workshop.

After the lockdown was lifted and we could return to school, very few teachers returned to the traditional face-to-face teaching methods. The vast majority **transferred easily** and seamlessly to blended learning. In the meantime, the school was **equipped** with projectors and smartboards, so the use of online teaching tools is easy.

In conclusion, the only field that we could not find an efficient solution for was the VET, the most important field of education in our school, this is the main aspect we need improvement in. The traditional teaching methods are slowly fading away, blended learning taking its place, a change welcome by most of the teachers and the pupils.

2.2.3. Bulgarian case study

The COVID-19 pandemic forced educational organisations to implement online-, blended- and distance- learning. Part of the challenges with these forms of teaching and learning are related to the procedures of testing and examination. There are specifics too in case of online testing/examination of larger groups, for instance, class of learners, or in case of the online certification examination.

Fair and fraudulent free testing/examination requires a set of organizational and technical means. We will discuss here how the School of Business Competences coped with these challenges.

Online Testing/Examination of a class of students who learn from home during lockdown/quarantine

The technical environment school classes work in comprises:

- e-learning platform - Moodle was used for online tests
- Zoom, Webex - for tutor-led teaching/ learning/ examination
- PCs, notebooks, tablets, smart phones.

The basic challenges were:

- Some learners tell the answers to others using alternative communications apps and channels.
- Parents/ relatives help the learners during the test/exam.



- During the test/examination some learners try to use training resources that are not allowed.
- In some cases, proofs are required to ensure that the learners sit the test/exam.

The solution:

A database of multiple-choice test questions was developed. For each topic on which the students had to be tested, a large enough set of questions was created. The goal was to be able to generate individual and different tests for each student. The rule for determining the number of questions on a topic was the following: if a test should include N questions, the set of questions on the topic should include at least $8 \times N$ questions. Criteria for the quality of test questions were applied. For instance, shorter formulation of the options/answers; the alternative answers statements to be with similar lengths; answers like “all of the above” or “none of the above” are not used.

The e-learning platform was set up to generate a random set of test questions and the multiple-choice answers for each question were randomly mixed too. This strategy reduced the likelihood that two students would have similar tests, and even if they had one or more identical questions in their tests, they would not have the same order of answers. The same strategy is used to conduct individualised mock-tests.

The time for conducting the tests is limited, an average of 1 minute per question was planned. In case the whole class is tested/examined online at the same time, this strategy does not allow pupils to exchange answers via some communication channels (chats, messengers, and the like), to consult with classmates, to search for answers on the Internet or books.

The procedure for testing/examining students, which is used to make official assessments, is as follows:

1. The teacher prepares the test/exam questions on the topic as described above
2. The teacher plans the testing/ examination in Zoom/ Webex and Moodle. The teacher:
 - a. Defines (class) rooms and for any of the (class) rooms appoints invigilators
 - b. Grants invigilators with rights to watch and record the class’s activities in Zoom/ Webex
 - c. Instructs the invigilators
 - d. Grants learners with access rights to the e-learning platform
 - e. Plans the time to conduct test/ examination
 - f. Via Zoom/ Webex sends invitations to the learners and invigilators
3. When the test/ exam starts the teacher instructs the learners.
 - a. The learners are informed that the test/ examination will be recorded following GDPR requirements

- b. The learners are required to keep their computers' video on, microphones unmuted, and their computers' desktops shared during the test/ exam
 - c. The learners are required to turn off any messengers, phones, and the like
 - d. The learners are required to keep their desks clean
4. The learners enter the virtual (class) rooms.
5. The invigilators ask the learners to turn their devices' cameras around to see there are no other people in the room and students' desks are clean.
6. The test/exam starts and is recorded.
7. During the test, the invigilators from time to time choose any student's desktop to provide records and evidence.
8. When the exam ends. The invigilators save the video record for further administrative and auditing purposes. The record is saved following GDPR requirements.

2.2.4. Cypriot case study

Education organisations in Cyprus faced similar challenges, related to the online modality, with the rest of Europe. The lack of systematic approaches, including universal guidelines, the reduced digital access, including lack of appropriate equipment and technical support, along the lack of digital competences from teachers and learners were among the most prominent obstacles (Nisiforou et al., 2021). In this context, we will present some best practice guidelines derived from the implementation policies of the University of Nicosia, a private higher education institution in the capital of Cyprus. To handle the disruption of learning and transition to a fully online mode, the university agreed on a Contingency Academic Plan. Among others, the plan directed to the following practices (Pouyioutas, 2021):

- Seamless transfer of face-to-face operations into an online context
- Preparation of teaching, academic staff, and learners.
- Adaptations of teaching material and transfer to the university's Moodle LMS (used for Distance Learning programmes or the inhouse developed LMS)
- Constant communication with learners (synchronous/asynchronous mode)
- Face-to-face and/or online training for the staff
- Learners' acquaintance with the LMS, accessing the material, communication procedures, etc.
- 2-hour videoconference training seminars (two in English and two in Greek) for the students (to be available on-demand) for discussion on academic issues and training
- Extensions for the submission of student assignments
- Selecting and integrating online tools for groupwork or replacement of group work with individual work
- Incorporation of alternative assessment

The main challenges related to digital inclusion: all participants needed the skills and access to reliable equipment and devices. Then, the design implementation of appropriate assessment was needed, following evidence-based authentication procedures. Along with that, the data protection and privacy issues should be considered (e.g., when using proctoring software), getting students' written permission. In contrast, alternative assessment methods should be in place. Finally, laboratory and practical field courses need to be arranged for face-to-face implementation.

The University responded well to the transition, especially in the months that followed the first disruption due to the development of an action plan. From the lessons learned, it is evident that blended learning will be profoundly implemented in the post-pandemic era. As a result, having an action plan for continuity is marked as imperative, involving crucial stakeholders such as policy makers and decision-makers.

2.2.4. German case study

The Digital Strategy 2025

The Digital Strategy 2025 program describes the priorities of the German Government to further develop digital capabilities and increase the use of new tools that aim at enhancing Germany's digitalisation processes. The strategy is composed of 10 steps towards in the future in which one of them is precisely directed to improving education: **"Introducing Digital Education to All Phases of Life"**

The German government acknowledges that digital education will become a prerequisite for a successful working life. Thus, the goals of the Digital Learning Strategies include:

- In 2025 every school student will have basic knowledge in information science, how algorithms function and in programming. To achieve this, appropriate courses must be required in lesson plans in the primary and secondary schools and teacher education and continued training.
- By 2025, Germany will be one of the leaders in digital infrastructure in the education sector.
- By 2025, the workplace should be the number one place to acquire the newest information technology (IT) knowledge.
- By 2025, all publicly financed educational institutions should make essential teaching material available online.

To reach these goals, digitalisation should be introduced early on in education and pushed as they go higher in their education stages. The following objectives have been the centre of the Digital Learning Strategy:



- School Education is the key to general knowledge. Thus, schools in Germany need to:
 - increase the use of digital media,
 - strengthen connectivity of companies and education institutions through partnerships or collaboration and
 - assist start-ups in the education sector to enhance access to the creative potential and expert knowledge of teachers.
- The dual system of Vocational training is the cornerstone of the strategy of producing highly skilled workers for the future. Seeing the importance of vocational training, the goals of the strategy are to:
 - align the dual system of vocational training with the demands of a digital economy
 - to offer further training in digitization at a high level in industry-wide continuing education centres
 - orient more strictly to practical skills, especially training for IT jobs
 - adapt existing occupations and to create new trades between fields of training
- Universities are the nucleus of digital innovation. Thus, universities need to:
 - promote the establishment of additional academic chairs and strengthen the available excellence institutions in the MINT areas (Mathematics, Computer Science, Natural Science, Technology), and in particular in information science
 - to include information systems, data analysis and the Internet as interdisciplinary areas of studies
 - expand programs for funding business formations at the universities introduce pop-level know-how to business and make it available in Germany and Europe
 - integrate better Massive Open Online Courses (MOOCs) and make e-learning complementary to classroom learning
- Continuing education is the key to lifelong learning and Work 4.0. Thus, it is expected that they
 - work with trade unions and employers to create means of more flexible and individualised digital continuing education
 - place particular focus on SMEs and provide help and instruction in digital training
 - continue to develop evaluation and perhaps certification systems for continuing education for employees without access to a company continuing education program

- expand media literacy and enable everyone to use the resources available on the Internet

Its connection to the current situation (During and Post the Covid-19 Pandemic)

Germany's Digital Strategy 2025 was adopted in 2016 for 10 years. The strategy is coordinated by the Federal Ministry for Economic Affairs and Energy with the active involvement of other public sector organizations, as well as business, the academic sector, the scientific community, and social partners.

In Germany, digital technology in education is a highly debated topic. For decades there have been emotional and heavy discussions about the merits of information and communication technology in education. Although the actions in the Strategy are originally intended to enable the German economy to respond to new challenges and to ensure its leading position both in quality and technology for years to come, by combining traditional competitive advantages with the newest technology, modern methods, and specific support programs, the relevance of the strategies, fit to the ongoing digital transformation that is also caused by the global pandemic.

Without a doubt, the Covid-19 pandemic has resulted in a more intense discussion on the use of digital tools in education as the pandemic has forced education to shift rapidly to distant learning. Although, the digital revolution reached higher education long ago. The current situation has opened new opportunities and challenges for teaching as learning. As a result, the German Government has been reinforcing and promoting the priorities to respond to current changes through various programs and funding.

2.2.5. Spanish case study

Context

Train the trainers is a project led by the Canary Islands Government, with the support from the Canary Islands Institute of Technology, started at the beginning of 2020, intending to assist medical universities in Western Africa in developing local expertise and human infrastructure to establish and sustain the state-of-the-art knowledge and technologies in medical training, primarily in the areas of learning digital anatomy and medical interventions. T&T strives to narrow the knowledge gap between historically privileged academic medical centres of excellence and developing countries, specifically in Western Africa (Instituto Tecnológico de Canarias [ITC], 2020).

This training program was based on the experience gained from the Interreg MACbioDi project (<https://medtec4susdev.org>) and the annual celebration in the Canary Islands of the NAMIC Project Week workshop (<https://www.na-mic.org/wiki/Events>), focused on medical technology, which is led by researchers from Harvard University and alternates every six

months between the Massachusetts Institute of Technology (MIT) and Las Palmas de Gran Canaria.

The **participants/trainers** are experts in the fields of medicine and engineering from around thirty universities, hospitals and public and private institutions **from more than 15 countries**, who improve their knowledge and technical skills in the Canary Islands and disseminate them in their countries of origin by replicating the experience locally, with the advice of Canarian experts.

The procedure followed by the project promoters

Initially, the project was developed to be implemented in a **face-to-face format**, offering conferences and thematic training courses in the medical field. The model was to create complete medical training setups at the Canary T&T hub, bring Western African academic medical educators for intensive hands-on courses, and then replicate the complete training setup in their home countries, with providing active telepresence and onsite support until the partners accumulate sufficient local expertise and human resources to sustain their operations.

However, due to the restrictions imposed by the Covid-19 pandemic, the programme was adapted to an **online** format. For this, several issues had to be addressed and analysed:

- Analysis of appropriate educational platforms for medical training
- Adaptation of content and methodology
- Consideration of multilingual needs
- The tools to be chosen:
 - **Moodle** (<https://moodle.org/>). A free Open Source Learning Platform, with a multilingual filter extension that allows creating resources in multiple languages, in this case in Spanish, English and French. In Figure 1, you can see the homepage of **Train the Trainers learning platform** (<https://training.itccanarias.org/>).
 - **Xerte** (<https://xerte.org.uk>). An Open Source platform to create interactive content.
 - **Zoom** (<https://zoom.us>). A web and app-based video conferencing service that offers tight integration with Moodle, supporting language interpretation in meetings or webinars.
 - **YouTube** (<https://www.youtube.com/>). A video platform for uploading the videos of each live session.

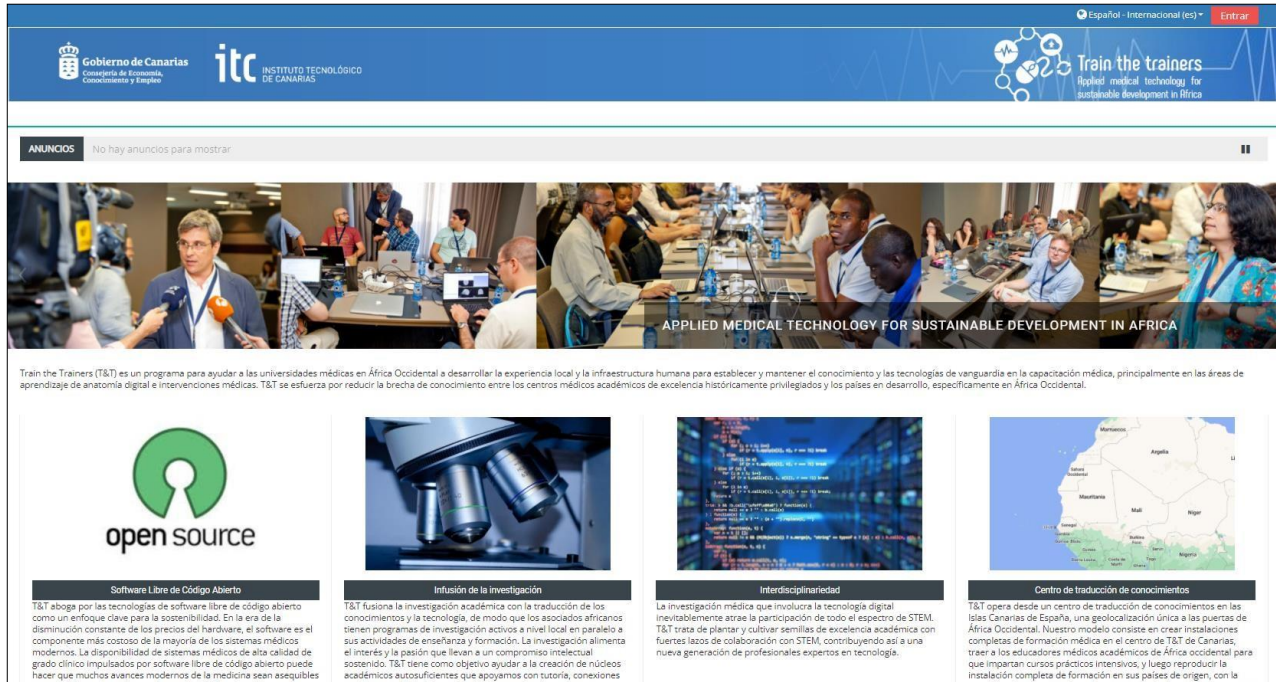


Figure 2. Train the Trainers homepage learning platform

In addition, different computer applications for teaching specific medical technologies were used in the content of the courses.

- **Open Anatomy Project** (<https://www.openanatomy.org/>): A project to change the anatomy atlas through open data, community-based collaborative development, and free distribution of medical knowledge.
- **3D Slicer** (<https://www.slicer.org/>): An open software ecosystem designed for translational clinical research with medical imaging, both for diagnostic and interventional purposes, and which also allows for the development of training systems.

Benefits

- It was possible to adapt the methodology in a quick and agile way. The comments received from the students were very positive, highlighting the suitability and clarity of the contents, as well as the dynamics of the course and the involvement of the teachers.
- It was possible to incorporate new training courses, such as Epidemiological Surveillance and Water Treatment Training.
- It was possible to offer the training to new centres, reducing travel costs.

Challenges

If the online training model usually presents difficulties, here we have added two extra conditioning factors, since the students are not used to this type of course and often have unreliable Internet connections. The great effort made by the students to achieve an optimal follow-up of the training program should be highlighted.

All live online sessions and materials were hosted on the e-learning platform so that students who could not connect live due to technical problems could consult and download them afterwards.

Recommendations

When designing content for students with potential low-quality Internet connections, the need to implement low-bandwidth strategies should be taken into account, facilitating offline access to the training materials, and accessibility from various devices.



Unit 3: Core process on online/blended teaching and learning

Based on the above findings, it seems a prerequisite to have a core process for preparing, designing, and delivering education via an online/blended learning mode. The process outlined in this Unit corresponds to the main procedure that can be followed during a normal teaching and learning period. This refers to the formation of a regular mechanism regardless of the imposition of disruptions; thus, it contradicts the term “emergency remote teaching” coined to describe the course of action taken to find alternative educational solutions, in an online context, to ameliorate problematic situations in times of crisis (Hodges et al., 2020).

In this context, it is worth mentioning Sawyer’s remarks regarding the essential principles of a learning environment. According to Sawyer (2005), the learning environment consists of the human agents (the people), the technologies used, the structure/layout of the context (with any objects existing) circled by the sociocultural dimensions. These four principles constitute the foundation of a framework proposed by Whittle et al. (2020) (Fig. 2), which we have elaborated and complemented with additional theories, models, and frameworks to propose a detailed process as a guide for the design and delivery of learning experiences. In the outline of the process that follows, we have included self-reflection questions based on the DigCompOrg model of the European Commission (for more details see Chapter 1, Unit 1).

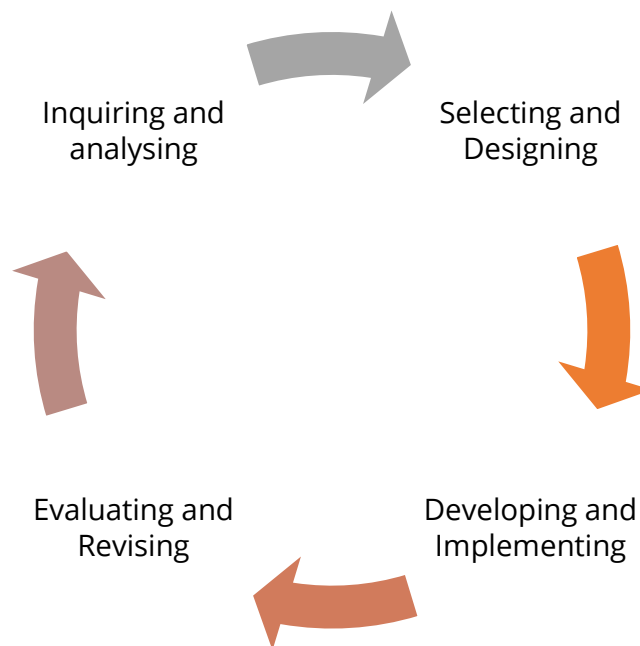


Figure 3. Proposed adapted process based on ERTE framework (Whittle et al., 2020)

Stage 1: Inquiring and analysing

The first stage in any framework commences with a procedure of analysing the environment and the corresponding agents. This means that we determine:

a. the participants:

- background (socioeconomic and cultural status)
- abilities, knowledge, and characteristics
- readiness level
- expectations and preferences
- opinions, perceptions, and attitude
- needs
- digital competence
- degree and extent of accessibility (to resources, technologies)

To analyse the profile of students you can collect answers to the following questions:

- ✓ What is the students' background (e.g., cultural, social, financial, familial)?
- ✓ What are their prior knowledge and skills? What is their eLearning readiness level (and digital skills)?
- ✓ What are their expectations?
- ✓ What are their strengths/weaknesses?

b. the context:

- **the online environment and its characteristics.** This includes defining any barriers it imposes such as potentially minimised motivation and self-regulation of students due to the self-paced modality that characterises it, potentially decreased connectedness due to the absence of physical interaction, especially if remote interaction is prolonged. These require relevant measures to be taken such as extra guidance on behalf of the teacher/trainer. Along with that, it is paramount to uncover the interactions that exist; in an online environment, there is more than one discussion going on during various periods, recorded so that anyone can reflect on these later. The more experienced users are usually those that initiate and lead the dialogues, offering relevant feedback while there are multiple representations of meaning through audio-visual material. The technology-mediated environment consists of multi-layered interaction among the educator-the student-the content-and the technology.
- **the physical/face-to-face environment and its characteristics.** As opposed to the online context, in the face-to-face one, there is usually linear and smooth communication at a normal speed (no prolonged interruptions- initiations after

long breaks as in forums, for instance). There is immediate contact, and usually one dialogue, with specific turn-taking, which requires a simultaneous presence (time and place) of the interlocutors involved.

- **the available resources.** These are resources that can change (variables) or cannot undergo modifications (constants). They refer to the infrastructure, both physical and digital including the available technologies, the internet connection (bandwidth, speed), the software/hardware, the devices as well as the training opportunities, the team of experts/technical support and the educational material. The funding can also be considered at this point.

To collect data for the above, as part of the inquiry and analysis, we can conduct a needs assessment. The aim is to identify all the gaps that exist and will be bridged through appropriate measures. The following steps can be of assistance in the needs assessment procedure.

Step 1- Identify the goals of the needs' analysis.

Do we have to collect data about the teachers or the students? Do we have to collect data about the constant or variable resources?

Step 2- Collect data about the target group/organization.

Objectively, through:

- research and literature reviews (e.g., adult learning theories for the characteristics of students, adult training methodologies, strategic actions to be taken)
- reports (e.g., quality assurance, mid-term/annual evaluations)
- tests/assessments
- case studies
- observations of responses, performance, interaction, body language
- critical incidents (e.g., recorded positive/negative feedback, awards)
- guidelines
- financial data
- work samples

Subjectively, through:

- focus groups/ interviews and discussions with the target group
- questionnaires
- self-assessments/reflections/diaries
- consultations with committees

- analytics (data from the online interaction of the participants)

The data can be quantitative or qualitative and can be collected through online and face-to-face means. We can reach out to members of the target group either from within our institution, from communities of practice (e.g., online social media groups), or external organisations with which we have signed partnerships.

When asking questions through interview/focus groups/discussions/questionnaires ensure that:

- ✓ The person feels comfortable in sharing information
- ✓ Ethical issues are maintained: anonymity, protection of data, voluntary participation, trustworthiness
- ✓ The questions are simple, specific, clear, and aligned with the goals of the analysis while covering all the thematic areas (adequate number and length). Additionally, we should avoid negative and double questions (one sentence asking more than one piece of information).
- ✓ The questions are formed based on the background of the target group (relevant and personalised)
- ✓ There are no biases, and the process does not lead the participant towards a specific answer
- ✓ The participants have access to the proposed format and means of data collection (e.g., an online survey with tools)

Useful information:

Framework 1. To assess participants' digital competence and skills we can use the European Commission's Digital Competence Framework for citizens⁶. According to the DigComp 2.0 model (Fig. 3), there are five (5) key areas on which participants exhibit mastery:

Information and data literacy: the ability to browse, search, filter, evaluate and manage data, information, and digital content

Communication and collaboration: the ability to use technologies to interact, share with others, collaborate, engage, while building and maintaining a digital identity and exhibit responsible and respectful behaviour.

⁶ <https://publications.jrc.ec.europa.eu/repository/handle/JRC101254>

Digital content creation: the ability to use technologies to develop, create, modify digital content as a means of expression. This requires respecting any licenses and including the attributions to the creator.

Safety: the ability to protect the devices (e.g., antivirus software, creation of strong passwords, acknowledge and spot any risks, protect, and respect personal data and issue of privacy, follow relevant policies, protect, and maintain physical and psychological health and well-being (e.g., cyber bullying) while being inclusive.

Problem-solving: the ability to spot technical issues and use appropriate technologies to solve them. It also includes the skill to solve problematic situations that arise in the digital milieu by engaging with oneself or the community, to bridge the existing gaps.



Figure 4. European Commission's DigComp 2.0 model (Vuorikari et al., 2016)

Framework 2. To assess the trainers' level of skills in terms of integrating technology to serve pedagogical purposes, we can consult the TPACK framework (Fig. 4). According to this, effective technology integration into the educational experience requires exhibiting expertise across three (3) core areas:

Content knowledge (CK): knowledge of the specific subject matter to be taught. What are we planning to teach?

Pedagogical knowledge (PK): knowledge of the pedagogy that will lead to the realization of the learning goals. How do students learn best?

Technological knowledge (TK): knowledge of using and working with the technological medium. Which technologies are available and what are the skills we have regarding their use?

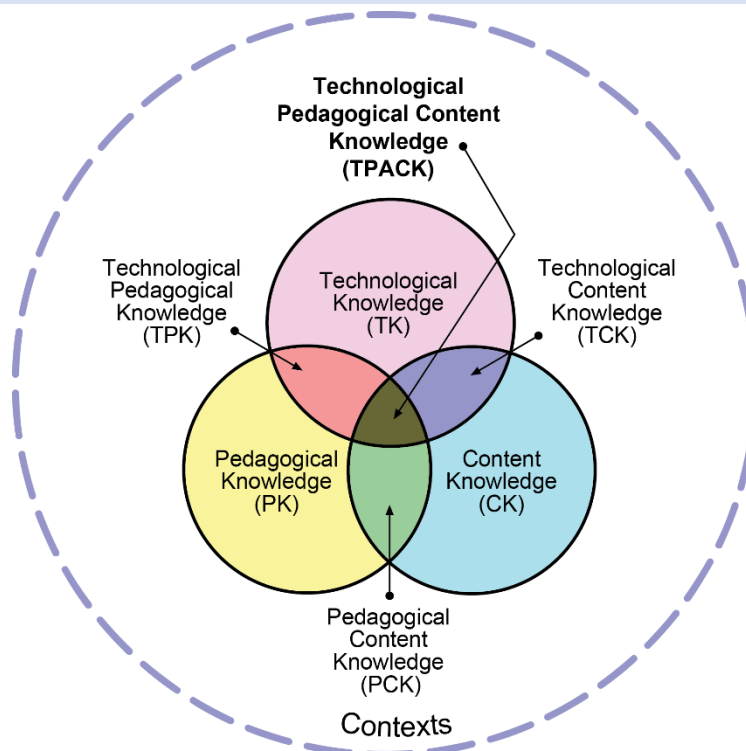


Figure 5. Representation of the TPACK Framework, reproduced by permission of the publisher, © 2012 by tpack.org

These areas are then intertwined and influence each other to form a holistic framework based on which the content-subject we are teaching can be mastered in various ways (Pedagogical Content Knowledge), supported differently from the existing technologies (Technological Content Knowledge). Technology, subsequently, with its limitations and capabilities, influences the pedagogy we follow to teach the content in a constructive way (Technological Pedagogical Knowledge). Therefore, it is crucial to reflect on which

technologies can be used at their best, to implement the appropriate pedagogies that will help the students acquire the new knowledge on a specific subject (Koehler & Mishra, 2009).

Using these frameworks as a reference we can prepare relevant assessments and surveys that evaluate both the target group's level of digital competence and teachers'/trainers' readiness level in terms of integrating technology effectively into the modern curricula. In the literature, there are ready-made tools that can assist in this process. On the one hand, the "[Digital Competence Wheel](https://digitaldannelsen.org/)" developed by the Center for Digital Dannelsen⁷, is a free online evaluation tool with a set of concrete questions to the respondents that will give an overview of the digital competences and which ones need to be improved. On the other hand, Dr. Denise Schmidt has developed a detailed [rubric](#)/checklist based on TPACK, to measure the teachers'/trainers' respective competences. This can be adapted to fit our purposes and context. With such data, we are profiling all those involved, to define the gaps and act, to improve the provision of online curricula.

Step 3- Analyse and interpret the data

Having collected the data, it is important to analyse them and conclude with specific interpretations that will determine our course of action. The analysis can be done either through the online tools used tool. For instance, if we have used a questionnaire formation tool such as Google Forms or SurveyMonkey, we can access the results that are visualized with pies, charts, bars or see the individual responses. We could also proceed with a more specialised analysis, finding the means through the MS EXCEL. In any case, the goal is not to have an extensive statistical analysis, but rather an overview of the situation. For the qualitative data (e.g., interview sayings) recordings allow us to thoroughly study the findings, spot the patterns that exist, organise them into thematic areas and draw relevant conclusions. Comparing the results with other trainers'/researchers' findings allows us to uncover the future directions. For instance, when it comes to students' preferences, about online/remote learning, researchers (Shim & Lee, 2020) highlight the need to address the following issues:

- provision of stable network connection with no buffering/lagging and high-quality transmission of audio-visual content
- recording and resharing of any synchronous teaching sessions for reflection and increased self-regulation

⁷ <https://digitaldannelsen.org/>

- increased interaction and communication among all participants for collaboration and adequate time for questioning and exploration
- provision of practical, hands-on, relevant tasks
- definition and communication of expected behaviour and assessment criteria
- equal workload across the semesters/academic years
- secured technical support and infrastructure
- establishment of regulations regarding attendance with flexibility and monitoring in place
- improvement of teaching quality and project-based work

Step 4- Setting new/revised educational goals

With these findings in hand, we are ready to define the goals both on an organisational level and on a course/learning programmes level:

The first one refers to **the institution-related goals** regarding the integration of technologies, the development and delivery of learning courses. We must explore the potential of digital technologies to exploit them appropriately. Then, we can prepare goals for digital learning that align with the institution's general strategy.

These goals can be related to:

- increased student participation
- increased rates of studies completion
- personalised programmes to target students' needs
- integration of digital technologies for improvement of educational experience

The second one refers to **the specific learning outcomes** to be achieved through the learning courses offered. When it comes to competences that our students will develop through the instruction, we need to ensure that along with the subject-specific competences, teaching is focused on developing their digital skills, based on the DigComp model mentioned before.

Apart from the specific subject-related skills or digital skills, some expected outcomes for students might be:

- positive attitude towards learning
- improved well-being and emotional health
- increased motivation and confidence
- increased work opportunities
- provision of guidance for career options

Both types of goals need to be SMART (Doran, 1981; Locke, 2004):

- **Specific** to the participants, the setting, the context, the mission. Reflect: What do I want to achieve and why? Who participates/is involved? In which context/place?
- **Measurable** so that we can assess whether it has been achieved and to what extent. Reflect: At which degree/extent (How much/many)? How shall I know that I have succeeded?
- **Attainable** with the resources, the skills, the timeframe we have available. Reflect: Is the goal realistic based on the available resources (e.g., budget). Which means do I have available to use to achieve the goal?
- **Relevant** to the participants involved. Reflect: Is it worth it? Is this the right time? Does this apply to me/us/the general environment? Does it match my/our needs? Does this seem worthwhile?
- **Time-bound** to a specific period. *Reflect:* By when should I have accomplished the goal?

Example: By the end of the next week, I will research and suggest to the educational technology team one new communication platform, for administrative issues, to improve the interaction among participants.

Stage 2: Selecting and designing

The second stage of the process continues with the selection and design of the educational experience. Initially, we need to select the type/format of delivery, remote or blended learning.

Step 1-Design a strategy and implementation plan.

Based on the goals set, the digital strategy plan should include a vision and mission that conveys the potential of digital learning technologies. The strategy is articulated through an implementation plan based on the challenges/facilitators of digital learning technology. The plan should foresee:

- practices of internal and external communication regarding the vision of technology integration
- responsibilities of each individual
- incorporation of open education practices (e.g., open courses, open lectures and open access to digital resources and publications)
- professional development of staff to improve their digital capacities
- (digital) inclusion and equal opportunities to all
- (re)design of curricula based on the digital capabilities

For the implementation plan to be effective, all members need to agree on this and commit to its smooth delivery while specific criteria are used to review its effectiveness (in terms of the outcomes, quality, and impact).

Step 2- Select the format of learning.

The nature of the subjects/classes and their content usually direct toward which mode of delivery best suits our needs. For laboratory classes and the conduction of experiments, blended learning seems more appropriate than fully online. In terms of blended learning, we can select a model by considering the **needs** identified during the **first stage**. On the one hand, this includes the needs of the training. For instance, we might need more hands-on tasks in a laboratory (labs rotation) or a classroom (flipped learning) when teaching a specific subject. On the other hand, it includes the needs of the students. For instance, we might need more independent learning or personalised interventions because some students have to attend extra classes added to the main courses taken, and/or complete differentiated assignments (flex, a la carte, enriched virtual).

Step 3- Select teaching method/approach and assessment of learning.

This step constitutes the backbone of the teaching and learning process. The methodologies which can be chosen, depending on the first stage (the analysis of the environment), the learning goals, the format/mode of delivery, the nature of the subject/classes, and the available resources. Focusing on innovation, it is important to integrate modern methods and approaches to better prepare students to participate in the digitised societal context. The aim is to create a safe place and community where there is a learning contract: the expected behaviours are forwarded to all members to cooperate and collaborate. Indicative examples of approaches, based on socioconstructive and social learning theories that place the student in the centre of attention, are the following:

- project-based learning
- problem-based learning
- inquiry-based learning
- case-based learning
- activity theory
- discovery Learning
- exploratory Learning
- simulation-based learning
- peer-/ collaborative learning
- Virtual Reality (VR), Augmented Reality (AR), Mixed Reality
- STE(A)M
- differentiated/personalized learning

Since self-regulation is a vital aspect of online learning, we should focus on empowering students to stay on track by providing motivational experiences with guidance and feedback on how to strategically plan, review and self-assess their progress. In this context, assessment is integrated as a way of monitoring the learning progress and evaluation of the achievement of the learning goals set. We can apply the following assessment types:

- **diagnostic** - before the instruction to assess the level of students' readiness
- **ongoing/formative** - during the instruction to gather relevant data and redirect students, accordingly
- **summative** - at the end of a unit/semester/year/course, to evaluate the degree of success and achievement of the goals

The format can vary but it is important to incorporate authentic assessment such as digital portfolio, rubric, peer-assessment, self-assessment as part of the learning process. The more authentic the assessment, that means resembling the real-life context where students will be asked to exhibit/use specific knowledge and skills, the more relevant the learning becomes to someone.

Reflect on the following:

Is there a plan for safety, risks, and responsible behaviour in online environments?

Are the roles of teachers/trainers and students redesigned?

Are the pedagogical approaches expanded?

Is personalised learning developed?

Are creativity and higher-order thinking skills promoted?

Are collaboration and group work used?

Is formative assessment integrated, aiming at improvement?

Is summative assessment diversified to become more authentic?

Are self- and peer-assessment promoted?

Is there provision of specific, supportive, constructive, prompt, and personalised feedback?

Step 4- Accommodate and select infrastructure-digital technologies.

At this point, we need to accommodate both the physical and online spaces with the appropriate infrastructure. The physical space complements the online one and strengthens its capabilities. Since both online and blended modes include a part where learning is technology-mediated and delivered via the Internet, it is important at this stage to select the relevant technical means that will support our needs. First and foremost, we need to select a Learning Management System that will host our lessons and courses while being a tool to be used for administration and management. Along with that, we can use other tools either integrated within the Learning Management Systems (LMS) (e.g., communication-related) or

connected externally. According to Piotrowski (2010), an integrated learning system allows us to:

- ✓ Create original content or upload ready-made multimodal material
- ✓ Organise content into a coherent learning course/ programme
- ✓ Deliver and present content to students (synchronously or asynchronously)
- ✓ Communicate and collaborate synchronously or asynchronously (e.g., leaders, teachers-students, parents)
- ✓ Assess and evaluate within the online classes created through various formats: self-assessment, portfolios, monitoring and tracking of learners' progress, etc.

For online learning to be successful, digital technologies, digital technologies are selected and integrated to assist the following aspects:

Administration/management. This refers to organising the basic tasks to be done for the delivery of online learning. It includes the registration of students, the creation and sharing of credentials, scheduling of classes, time-planning of the academic year. At this point, we also need to ensure access of all to the online context, through suitable software/hardware.

Relevant tools:

[TaskBoard, Trello](#): Kanban-inspired apps for keeping track of things that need to get done.

[Jira](#): built for every member of a team to plan, track, and release great software.

[Vanco education](#): organisation management tool to conduct and arrange online registrations, assessment, digital attendance sheets, and reminders.

Communication. During online learning, which is an inherent part of both remote and blending modes, there is a distance gap. This gap is bridged with the use of digital technologies. Interaction includes making announcements and informing the participants (e.g., teachers/trainers, support staff, parents), sharing content, and discussing tasks. This is achieved both through the chosen LMS with features such as chat, forums, wikis, messaging and/or additional tools such as web conferencing and social media networks. In this context, communication entails addressing administrative, managerial, and marketing procedures, policies, operations, campaigns (e.g., inform and attract students and parents) as well as teaching and learning tasks.

Relevant tools:

[Jitsi](#): video conferencing tools

[Google calendar](#): time-management and scheduling calendar developed by Google

[Doodle](#): online meeting scheduling tool, a polling tool to vote and coordinate (e.g., choose dates for a meeting)

[Calendly](#): online appointment scheduling tool for effective coordination

Collaboration. It refers to the digital interaction and group work among the participants involved. The aim is to exchange ideas and create an (online) community of practice. For instance, teachers/trainers collaborate for an upcoming event, co-create, and share learning content, establish communities to improve their everyday professional lives (sharing examples of best practices, solving job-related issues). To strengthen collaboration, online conferences should be arranged and conducted frequently (across all departments), collaborative work is promoted (e.g., creation of lesson plans, co-teaching sessions in interdisciplinary subjects, parents' involvement in projects) and collaborative learning practices are integrated. To achieve success, the online environment needs to be a safe, intimate, and inclusive place, where one can freely express her/himself. For this reason, "protocols" of the accepted behaviour need to be set and followed by all.

Relevant tools:

[Padlet](#), [Miro](#), [Mural](#): whiteboard-style tools

[Google Jamboard](#): A G Suite digital whiteboard that offers a rich collaborative experience for teams and classrooms.

[Sutori](#): A collaborative instructional and presentation tool to create presentations as stories that can be viewed one panel at a time, like a slideshow, or scrolled through, like a timeline.

Monitoring. Digital technologies are used for continuous monitoring, too. This refers to keeping track of participants' opinions (e.g., through discussions, focus groups/interviews, observations, surveys) and students' learning. We can either use digital tools for monitoring per se (e.g., a diary to keep track of to-dos) or exploit the data provided by them; this data keeps us up to date about the progress of the user. Specifically, we can spot what students have viewed/completed within an app, the frequency of interactions, and the time taken to do a task. By analysing such data and extracting reports that many tools automatically produce, we can guide, assist, and later revise the overall learning procedure.

Relevant tools:

[Matomo](#): A web analytics platform that gives you 100% data ownership. Matomo users can safely use analytics without worrying about data being used for marketing or any other purposes.

[Moodle proctoring](#), [Proctorio](#): tools to secure the integrity of online assessments

Teaching, learning, assessment. The main part of the learning experience is mediated by the new technologies. These allow us to deliver content, distribute material, share resources, assign activities/tasks for learning, review, and assessment, provide feedback and grade students.

Relevant tools:

[Audacity](#): audio-recording/editing tool

[Screencast-o-matic](#), [OpenCast](#), [OBS Studio](#): video capturing tools

[Shotcut](#): video-editing tool

[Simple show Videomaker](#), [Animaker](#), [Plotagon studio](#), [Animoto](#): video-creation and storytelling tools

[Genially](#), [Canva](#), [Prezi](#), : presentation, infographic creation tools

[Wooclap](#), [Nearpod](#), [Mentimeter](#), [Slido](#): student-response tools to enhance engagement

[Quizlet](#), [Kahoot!](#), [Wordwall](#): quiz creation tools

[H5P](#), [iSpring Free](#), [Typeform](#), [Redmenta](#), [Xerte](#) : digital content creation tool (e.g., various types of assessment/exercises)

Assistance. This refers to the modification of the environment to be inclusive and diverse. There are specific types of technologies for this called assistive. They include devices such as alternative keyboards and mice, voice recognition/text-to-speech software, monitor magnification software that aim at accessibility for all.

Relevant tools:

[Balabolka](#): Free tool text-to-speech. Text can be saved as an audio file and subtitles.

[Ginger](#): A tool that helps students with dyslexia and other learning disorders with writing: grammar checking, word prediction, punctuation, and spell-checking TTS, etc. It works across all websites, tools, and devices. Personalisation is available by identifying a user's mistakes and offering lessons to improve those topics.

[BrailleBlaster](#): Free open-source text to braille converter for Windows.

Having in mind which one of the above aspects we target, we can evaluate the digital technologies based on the features below:

- the software is in line with the general purpose we want to achieve (administration/ management, communication, collaboration, monitoring, teaching, learning, assessment)
- there is an interaction among the user-tool- content (if, any)
- participants engage with higher-order thinking skills
- there is assistance/support within the tool (e.g., messages appear, documents, chats, links to external websites, additional material)
- users' interaction can be tracked/monitored
- activity reports are produced
- the tool is accessible, based on users' individual needs (e.g., the graphics/links/reading format)

- the tool is personalised (e.g., the tool adapts to users' learning needs such as the speed, the acquired skills, the user can stop and continue whenever s/he wants, the user is directed to further reading/practice based on his/her abilities)
- the multimedia is of high quality
- the design and structure are user-friendly easy-to-navigate
- the user can provide feedback
 - the degree of adaptability, that is the level on which the tool adapts to users' needs such as the speed, the acquired skills, etc.

Reflect on the following:

Do the physical learning spaces optimise the affordances of digital-age learning?

Are the online learning spaces enhanced?

Have we planned and organised the infrastructure?

Is there a policy regarding the usage (rules, allowances, limitations) of the technologies?

Is there a variety of digital technologies to promote flexible learning (anytime/anyplace learning)

In blended learning, are the Bring Your Own Device (BYOD) approaches supported

Do we address issues of the digital divide (e.g., inequality) to achieve digital inclusion?

Is technical and user support provided?

Are there assistive technologies incorporated for students in need of special support?

Are there measures in place to protect privacy, confidentiality, and safety?

Step 4- Selecting resources and designing activities

The resources we incorporate refer both to the guides and the content/resources for the activities of the lessons. The guides provide an overview of the learning outcomes, the content, and the activities that students will have to complete. The learning material can be either physical or digital. We can select from existing repositories and sources (e.g., OERs, trustworthy websites, previous courses, the same course in case it has already been delivered) and can be used as it is or be adapted. To find relevant material, we can use common browsers and search engines (e.g., Google, DuckDuckGo) by inserting specific keywords. It is important we consider the [Creative Commons Licensing](#). The material needs to be multimodal with audio-visual elements and interactivity (e.g., links to web pages). We can include Virtual/Augmented Reality (AR), three-dimensional (3D) multi-user virtual worlds (VWs), games, digital diagrams/graphics, photographs/images, maps and infographics, posters, rubrics podcasts, among other resources, including printed material (e.g., books). Having collected the so-called “raw” material, we have to refurbish the digital versions of it, organise it and present it using digital tools. This modification process is paramount, to create more customised content.

In terms of the activities to be designed, these can be a combination of the below:

- **warm-up/pre-instructional activities.** The aim is to get students acquainted with what is going to be taught, motivate them early on, show them the relevance of instruction with the real world and their own goals. At the same time, we assess the prior knowledge.
- **presentation of the content.** The aim is to “deliver” the content to the students. This does not mean that a traditional direct approach is followed; it refers to the way the content will be accessed by the students in line with the objectives set. The presentation can be direct (e.g., read an interactive presentation, watch a video) or indirect (e.g., set questions and answer them by finding and reading articles to draw conclusions). In both cases, we need ample content with detailed examples and guidance.
- **activities for engagement and participation.** The aim is to ask students to engage with what has been presented (directly/indirectly) through a hands-on task that asks them to practice the skills/knowledge we want them to acquire. Provision of feedback should be ensured.
- **assessment,** including the diagnostic, formative and summative assessment of students' skills, attitudes, and satisfaction.
- **follow-up activities** that will allow the learners to review what have learned, promoting self-reflection and metacognition.

- To design the above activities, we should consider the benefits of synchronous and asynchronous communication to select the appropriate mode (Table 2). For instance, if following the flipped classroom model, we might choose to present the content asynchronously.

Table 2. Characteristics of asynchronous and synchronous learning

Asynchronous Learning	Synchronous Learning
Flexibility over when and where.	"Fixed": same time, same place.
Flexibility over the presence of the teacher and students. Presence and participation need strengthening.	The presence of the teacher and students is required.
Control over the place, time, and way of learning.	Some control over the way of learning but not the place and time.
Independent, self-paced learning needs strengthening.	More "structured" pace of learning.
Feedback needs to be structured.	Feedback is immediate.
<i>Indicative examples:</i> online discussions, reading/notetaking, video-based activities, mind mapping, listening to podcasts, interactive teacher-made resources, inquiry-research-exploration activities, reflection	<i>Indicative examples:</i> modelling, role-playing, small-/large-group work, presentations, clarifications and real-time feedback, guided practice and application, coaching

Reflect on the following:

Who are the creators of content? Are staff and students involved in the process?
 Are content repositories widely and effectively used?
 Are Open Educational Resources promoted and used?
 Is there attribution to the creators, respecting copyright rules and intellectual property?
 Are the digital tools and contents licensed as required?
 Do the activities promote and maintain students' engagement?
 Are students' digital skills developed across the curriculum?
 Is the content multimodal?
 Are the content and the activities aligned with the learning goals and the assessment?

Is subject-based learning reimagined to create more integrated approaches?

Stage 3: Developing and implementing

The third stage of the process continues with the development and implementation of the educational experience. Based on the content selected and designed in the previous stage, specifically the strategy, the format of learning, the teaching methods/approaches, the technologies, the resources/content/activities, we can:

- **Create a sample of the educational experience**, a prototype. This includes arranging and planning the required actions both on an organisational and instructional level such as contacting the participants, informing them about the format of learning and the expectations, enrolling/registering them in courses, informing them about the available and/or required equipment/infrastructure, arranging the structure of the instruction in the classes. At this point, the prototypes of the individual courses are also prepared based on the lesson planning procedure already conducted.
- **Develop the material** needed for both organisational and instructional actions: administration, management, monitoring, teaching, and assessment. To achieve this, we use the relevant tools we have already chosen, and the content selected and/or designed during the previous stage.
- **Conduct a run-through**, a “rehearsal” of the educational experience, experimenting with participants including teachers/trainers, support staff, and learners who can provide feedback for improvement.

This experimentation allows for the implementation and delivery of the educational experience/instruction:

- **Train/prepare the participants**. This refers to ensuring that all those involved in the learning process (teachers/trainers, support staff, students, and parents) are ready to successfully engage and participate. Since digital technologies are incorporated and new methods of administration/instruction/learning are followed, it is crucial that all know what is required from them and are familiar with what is expected to complete. In this context, it is important to provide the staff with opportunities for continuous professional development (CPD) related to the integration and effective application of digital technologies and pedagogies. The opportunities given should cover both the needs of the organisation (e.g., training on how to collaborate online) as well as the needs of each individual (e.g., teacher training on how to provide constructive feedback). The approaches used for CPD can be of different types, for instance, face-to-face, blended, or online, provided within or outside the unit. Since the development of staff takes time and effort, relevant accreditation and certification

need to be in place, strengthening the professional aspects of the team. Apart from official training opportunities, the essence of lifelong learning should pervade the culture of the organisation. Individually, members of the staff need to engage with a lifelong learning process, using the new technologies. For instance, they can:

- search online for training opportunities (e.g., tutorials, Massive Open Online Courses [MOOCs], webinars, seminars, etc.). Some well-known MOOCs repositories are the following: Coursera, edX, Udemy, FutureLearn. They provide courses in various fields for career advancement.
 - sign up to newsletters/ subscribe to articles on a subject of their interest
 - expand their teaching and technical skills repertoire
 - strengthen their professional efficiency
 - participate in online communities of practice to keep up to date on their relevant field
- **Organise the learning environment/space:** this refers to making sure that all arrangements are efficiently conducted, in terms of the material, the activities, and technicalities. Having plan B's is important to ensure that any challenges that may arise, for instance, system failure, can be tackled.
 - **Organise collaboration and networking practices:** even though collaboration is important at all stages, from the initial analysis to the design of the procedures, we mention it as a specific step in the actual implementation of the educational experience, to differentiate it from the selection or design actions. A culture of cooperation needs to be established with internal and external stakeholders, among all staff and learners. The goal is to share experiences, insights, challenges and facilitate the digital educational experience through:
 - ✓ networks and communities of practice within the organisation for synergies among staff and students
 - ✓ networks and communities of practice beyond the organisation for synergies among staff and students
 - ✓ promotion and recognition of participation in events and activities aiming at knowledge-sharing
 - ✓ development of strong partnerships with different types of organizations (e.g., businesses, research centres, universities, etc.)
 - ✓ involvement of staff and students in the partnerships formed for their voices to be heard and their skills to be built.

An organisation needs to have a strong social presence in the wider community, which can be established with the use of online platforms and social media channels.

Stage 4: Evaluating

Evaluation is conducted throughout and at the end of the design and delivery. On one hand, the students' and staff's performance is evaluated on an ongoing or summative stage with feedback for further improvement. Among the most useful tools for this are the questionnaires (online or physical format) and focus group/interviews. Assessing students' performance is already part of designing a course since it has to be in line with the objectives set. On the other hand, the programme and courses need to be evaluated themselves based on criteria that reflect administration, organisation, teaching and learning, and communication issues (Sofos et al., 2015). The criteria we can use for evaluation purposes of an online/blended learning programme are the following:

- prerequisites: clearly stated and communicated to all participants
- technology requirements: clearly stated and communicated to all participants
- learning outcomes: clear and consistent
- activities: in line with the outcomes to be achieved
- assessment: students' progress against the expected outcomes
- the technology used: appropriate for the purposes
- interaction: multi-layered, facilitated, sustained
- instructional materials and content: rich, multimodal, accessible, support the desired outcomes
- interface: easy-to-navigate platforms and tools, interactive elements enhance readability
- feedback: timely given and constructive
- students' support: guidelines, instructions, technical teams in place
- teachers' organisation and management: sustained presence, efficient online classroom management (e.g., students' behaviour)

Chapter 2: Business Continuity plan

Unit 1: Business Impact Analysis

1.1 Purpose

The Business Impact Analysis (BIA) process is a key component of Business Continuity Management (BCM) and in particular Training/Education/Learning Services Continuity.

BIA is designed to:

- Identify vital training functions and their dependencies.
- Define recovery requirements for training services. These requirements include Recovery Time Objectives (RTO), Recovery Point Objectives (RPO) and Minimum Business Continuity Objectives (MBCO) for each educational service.

The BIA aims to help identify:

- Business requirements, impacts and risks regarding educational services.
- The scope of the BCM program.
- Business Continuity Management Strategy.
- What the critical educational services are and what a major incident for these services is
- Acceptable levels and times for educational service interruptions.
- Critical periods for business and educational services.
- The cost of loss of educational service.

The realistic requirements for the levels of educational services to be included in the SLA.

1.2 Field of application

The BIA process may be used for:

- Training/Education/Learning products and services.
- New and changed educational services.
- For planned risk reassessments in the continuous improvement cycle.

BIA is not a one-time event. It is used both for the initial assessment of the impact of educational service interruptions on business and in cases of changes in existing educational services and/or in planned risk reassessments in the cycle of continuous improvement.

1.3 Terms

Business Impact Analysis (BIA): A process of analysing activities and the effect that business interruption may have on them.

Maximum Tolerable Period of Disruption (MTPD): Time for which adverse effects that may occur as a result of not providing a product/service or carrying out an activity will become unacceptable.

Minimum Business Continuity Objective (MBCO): Minimum level of services and/or products that are acceptable to the organisation to achieve its business objectives during the break.

Business continuity: Ability of the organisation to deliver products or services at acceptable, pre-set levels after a devastating incident.

Service level: One or more metrics that define the expected or achieved level of service quality.

Invocation: Act declaring that measures to ensure the continuity of an organisation's activities must be put in place to continue to supply basic products and services.

Service Level Agreement (SLA): The documented agreement between service provider and customer that identifies required services and expected service levels.

Business Continuity Management (BCM): A comprehensive management process that identifies the potential threats to an organisation and the impact of those threats on the overall business that they could cause if implemented, and that provides a framework for achieving organisational sustainability with an effective response that protects interests its main stakeholders, its reputation, brand, and value-added activities.

Recovery Point Objective (RPO): The point at which the information used for an activity must be recovered to enable the activity to function on resumption.

Objective: A result to be achieved.

Recovery Capacity Objective (RCapO): The minimum level of staff members to restore the affected training services within a given RTO.

Recovery Time Objective (RTO): Period after the incident in which:

- The product or service must be restored, or
- The business must be restored, or
- Resources must be restored.

1.4 BIA Process description

1.4.1. General provisions

The BIA is at the heart of the Business Continuity Management Program (BCM), in particular the Educational Services Continuity Management.

The BIA examines the training/ educational/ Learning products and services, as well as the activities and dependencies that underlie these deliveries. For each product or service, the purpose of the BIA is to:

- Document the effects over time that would occur in the event of loss or interruption.
- Identify the maximum tolerable period of disruption (MTPD);
- Set priorities for recovery.
- Identify the dependencies and resources (both internal and external) that are needed to achieve consistent service levels.

1.4.2. The BIA process

This BIA process aims to develop a business analysis framework and outline the scope of a training/educational organisation's BCM program. The process is carried out by a working group. Depending on the objectives and scope of the BIA, the working group may be appointed by senior management, a director of a directorate or a head of a department. For example, a e-learning's department head may appoint a working group to conduct a BIA for information systems in his area of responsibility.

The minimum goal of this BIA process is to identify the products and services, processes and activities in the organisational structure of a training/educational organization. For each Training/Education/Learning product/service /process /activity, evaluate the relevant MTPD, analysing the activities and resources if time permits.

Methods and techniques for conducting an initial BIA include:

- Questionnaires.
- Structured working group meetings.
- Interviews.

Input Data

Input data may include:



- Working group to carry out BIA.
- Information about the product portfolio of the training/educational organisation.
- Information about information systems and applications.
- Information related to the goals, environment, functioning and interdependencies of the training/educational organisation.
- Information about significant forthcoming changes in the training/educational organisation or in the environment in which it will operate.
- Information on the regulatory requirements for the training/educational organisation and individual products and services.
- Detailed data on the activities and functioning of the training/educational organisation, including processes, support resources, interactions with other organisations, outsourcing agreements, stakeholders.
- Financial and operational consequences of the loss of critical processes.
- Prepared questionnaire.
- List of interviewees from the relevant organisational units of the training/educational organization and/or stakeholders with whom contact will be established.

Output

The results of a BIA are documented in a working document **WD1 Educational Services BIA** and one or more questionnaires **WD3 BIA Questionnaire for XXXXX**, where XXXXX is the name of the service.

- List of all processes and activities that contribute to the delivery of training/ educational/ learning products and services.
- For each training/ educational/ learning and activity - MTPD and its justification.
- Main dependencies of the activities - internal and external.

Description of the process

The BIA process' diagram is given in Figure 6 below.

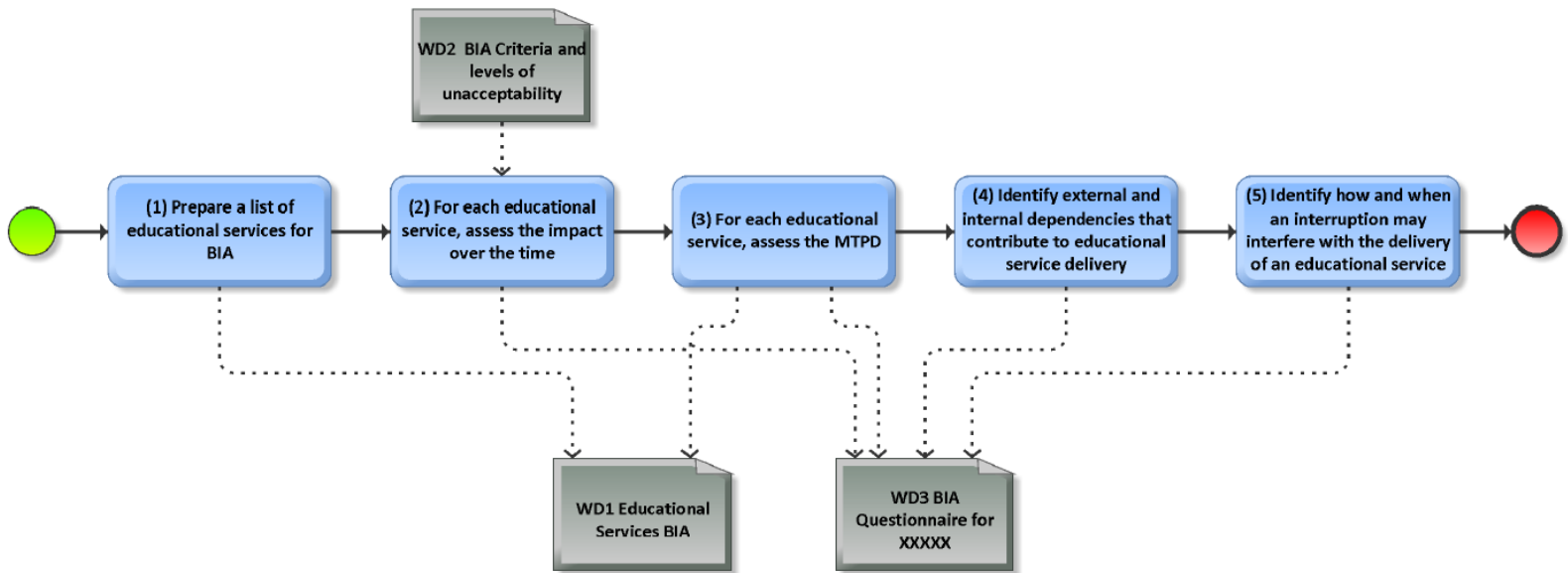


Figure 6. The BIA process diagram

1. Prepare a list of educational services for BIA

- Decide on the scope of the BIA. For example, the information systems and applications used for distance learning.
- If there are significant changes in the educational organization or the environment in which it operates, decide whether to include them in the scope of the BIA.
- To simplify BIA, group services within the BIA scope based on the urgency of delivery/service systems or applications.

Use working document **WD1 Educational Services BIA**. If necessary, for BIA purposes, you can group them by other criteria.

- Agree on the impacts to be considered as well as the criteria for determining ineligibility levels.

Use the **WD2 BIA Criteria and Levels of Unacceptability Matrix** ([Annex 2](#))

2. For each educational service, assess the impact over the time

- For each educational service/group of services in **WD1 Educational Services BIA** assess the impact over time in case the delivery of this educational service/group of services is interrupted.

To do this, create a copy of the **WD3 BIA Questionnaire for XXXXX** working document for each educational service/group of services and name it appropriately. For example, **WD3 BIA Questionnaire for e-Learning courses**.

3. For each educational service, assess the MTPD

- Evaluate the MTPD for each service/service group within the BIA and agree on it with the sponsor of the BCM program.
- Record the MTPD in the working document **WD1 Educational Services BIA**.

4. Identify external and internal dependencies that contribute to educational services delivery

- Identify the software and hardware on which the educational service/service group depends.
- Identify external services on which the educational service/service group depends.
- Identify the business processes that deliver the educational service/group of services.
- Identify the owners of each process/service/service group/system and application.
- Document them in the relevant **WD3 BIA Questionnaire for XXXXX**.

5. Identify how and when an interruption may interfere with the delivery of an educational service

- Identify how and when the interruption of the normal operation of software, hardware, external services, or business processes from step (4) may interfere with the delivery of the educational service/service group.
- Document the results of this step in the relevant WD3 BIA Questionnaire for XXXXX.

1.4.3. How to use the BIA results

Represent the BIA results produced by this process to the BCM programme's owner who shall use them for developing BCM strategies and tactics, as well for developing contingency plans.

1.5 References

Refer here to any internal or external document.

1.6 Roles and responsibilities

Roles and responsibilities in the BIA process



Activities	Training/ Educational top organization top management	BCM programme owner	Department managers	BIA working group	Educational products and services owners	subject matter specialists	Partners and Vendors
BCM programme	A	R	C/I	C/I	C/I	C/I	C/I
Assigning BIA working group	A	R	R	C/I	I	I	I
Conducting BIA	A	C/I	C/I	R	C/I	C/I	C/I

Key

Responsible (R) - a role that performs work on BIA and/or creates BIA. Accountable (A) - a role that is ultimately responsible for the correct and complete execution of a task. The Responsible role reports to the Accountable role. Consulted (C) - a role whose opinion should be sought and with which there is two-way communication. Informed (I) - a role that needs to be informed about progress, task performance or product delivery. Communication is one-way. Endorse (E) - a role that approves/accepts.

1.7 History

Date	Created / Changed / Reviewed / Approved by ...
DD.MM.YYYY	

1.8 Distribution list

Working documents

Working document	Document ID	Version	Where/ Who Stores it?
Educational Services BIA	WD1	01.00	
BIA Criteria and Levels of Unacceptability Matrix.	WD2	01.00	
BIA Questionnaire for XXXXX	WD3	01.00	



Unit 2: Risk assessment

Upon the outbreak of the pandemic and the transition of education organizations into a remote and later hybrid mode of teaching and learning, it became evident that handling risks needs to be the priority of all business units. Having identified the challenges related to remote teaching (Chapter 2-Unit 2), we can outline the risk management procedure that VET organizations can follow when it comes to future disruptions caused by emergencies. The process is based on the ISO 31000:2018 document for Risk Management and is graphically presented in the figure below (Fig. 7). There are three crucial steps: definition of the scope, context, and criteria, risk assessment, and risk treatment. We will mainly focus on risk assessment and treatment.

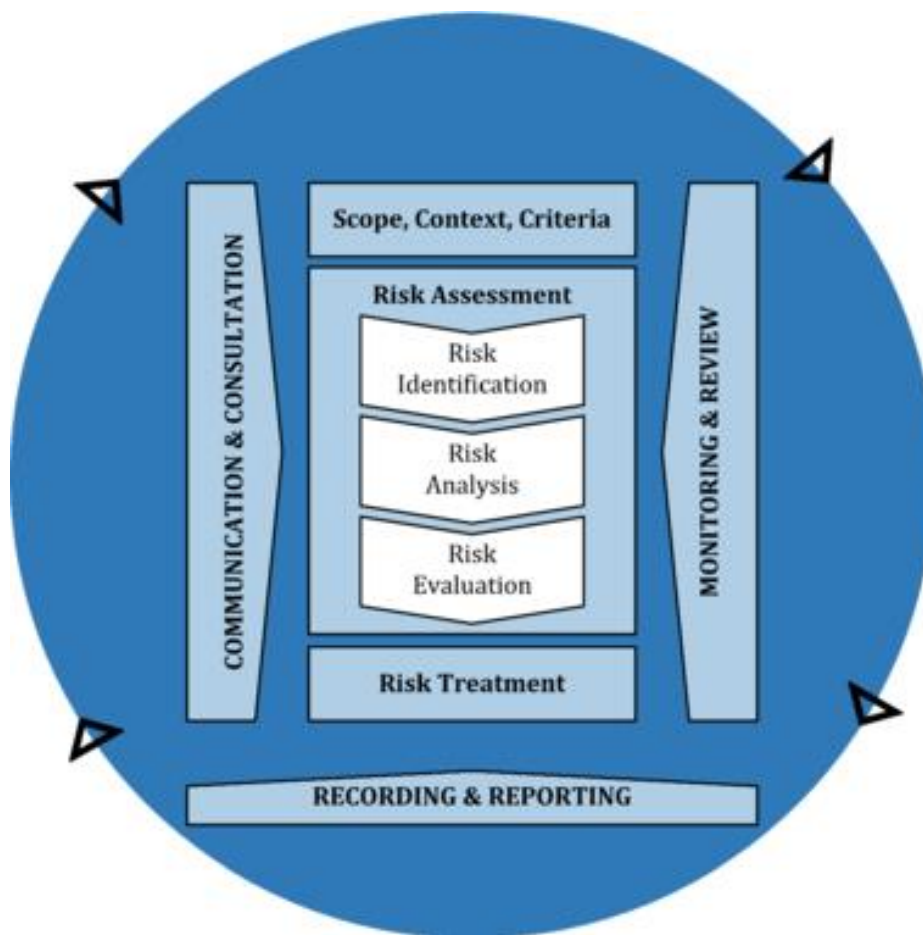


Figure 7. The risk assessment process of ISO 31000:2018

1. Scope, Context, Criteria

What is the scope of the risk management activities we are planning to develop and implement?

The scope might be to proceed to changes on a strategic (e.g., digital transformation) or a programme level (e.g., courses).

For this, we need to consider:

- objectives and decisions to make
- expected outcomes
- time, location, inclusions, and exclusions
- risk assessment tools and techniques
- resources required, responsibilities and records to keep
- relationships with other projects, processes, and activities.

The context refers to the environment where the organisation will conduct the risk management process and the criteria refer to the amount and type of risk that it will take to achieve the objective (e.g., based on the resources to be spent, the capacity needed, the consequences, etc.)

In our case, the objective is to achieve **a smooth operation of learning in a remote or hybrid environment**, making decisions on an organisational and unit level. Through the decisions taken (e.g., ways of organisation, communication, teaching, learning, assessment) we expect that all the procedures will continue to operate, even when disruptions occur.

2. Risk assessment

a) Risk identification

This process involves finding and describing the risks that might prevent our organisation to achieve our objective, that is the smooth operation of teaching and learning. To identify the risks, we need to find and gather information related to:

- both tangible and intangible sources of risk
- causes and events
- threats and opportunities
- vulnerabilities and capabilities
- changes in the external and internal context
- indicators of emerging risks
- the nature and value of assets and resources

- consequences and their impact on objectives
- limitations of knowledge and reliability of the information
- time-related factors
- biases, assumptions, and beliefs of those involved

The most prominent risks related to **learning disruptions** are the following (Noskova et al., 2020; Shtaleva et al., 2021):

- issues of access/ digital exclusion (e.g., due to lack of digital competences, lack of equipment such as personal computer/mobile devices/Internet access, required absence of teacher/student(s))
- lack of pedagogical competences (e.g., lack of problem-solving, online safety, creating materials online)
- decreased motivation, engagement, and self-regulation
- data protection and privacy issues
- participants' resistance and negative feelings toward innovative methods of teaching/learning
- ineffective communication among all those involved

b) Risk analysis

This involves understanding the nature and characteristics of risks. How possible is it that they will happen? What is their impact? What is the level of the consequences caused? How effective are existing controls? We can analyse the risks quantitatively or qualitatively. The first refers to analysing the risks using numerical values and statistics while the second refers to analysing the risks using written descriptions and evaluation of the impact. To quantify the impact of the risk-related events in this document is complex since this depends on each organisation. For example, an impact might be a higher rate of dropouts, based on the student population (enrolment) in each organisation. However, for quantitative purposes, you can assess risks based on their **likelihood and impact**:

- the likelihood that this potential risk might present a problem on a Likert scale of 1 to 5, where 1 is extremely unlikely and 5 is extremely likely
- the impact that this potential risk might have on the learning programme/course on a Likert scale of 1 to 5 where 1 represents a minor impact and 5 represents a major impact.

The risk levels can be defined by multiplying the 'likelihood value' by the 'impact value' to produce scores on levels. For instance:

- A score between 1 and 10 - Low-Level Risk

- A score between 11 and 20 – Medium-Level Risk
- A score between 21 and 30 - High-Level Risk

In the following section, we will analyse the potential risks qualitatively below (Fig. 8), we present a graphic of the cause-and-effect relationships that emerge for each of the risks identified before.



1. issues of access/ digital exclusion

- exclusion from learning
- reduced participation/dropout
- incompletion or varied completion of tasks
- poor learning design, development, delivery
- poor performance
- failure to achieve expected learning outcomes

2. lack of pedagogical competences

- exclusion from learning
- reduced participation
- incompletion of tasks
- inappropriate curriculum alignment
- poor content
- low quality of teaching and assessment
- low self-regulation
- stress, pressure
- inefficiency
- irrelevance of learning
- low satisfaction
- poor reputation/public image for the organisation

3. decreased motivation, engagement, and self-regulation

- reduced participation
- incompletion of tasks
- poor performance
- failure to achieve expected learning outcomes
- low satisfaction
- dropout
- irrelevance of learning
- poor reputation/public image for the organisation

4. data protection and privacy issues

- unsafety/security threats
- reduced participation (hesitancy)
- legal risks
- exposure of personal life
- emotional harm
- poor reputation/public image for the organisation

5. participants' resistance and negative feelings toward innovative methods of teaching/learning

- low effort
- reduced motivation and engagement
- poor performance
- dropout
- incompletion of tasks
- stress/anxiety
- low satisfaction
- poor reputation/public image for the organisation

6. ineffective digital communication

- incompletion of tasks
- misunderstandings and conflicts
- poor performance
- stress
- emotional harm
- dropout
- low satisfaction
- poor relationships
- low motivation
- poor reputation/public image for the organisation

Figure 8. Qualitative analysis of risks involved

c) Risk evaluation

Based on the analysis, risk evaluation involves reflecting on the impact of the risks, making decisions on whether treatment is needed. The actions include:

- doing nothing (e.g., when an impact is not major)
- proceeding to risk treatment
- reanalysing the risks to further understand them
- using existing measures/acts of controlling the risks
- changing the initial objectives

Almost all risks identified impact negatively the **quality of the learning programme and the completion of it** accordingly. For this reason, we perceive all as critical risks for which we need to define treatment, apart from the fifth risk identified: treating all the others risks and especially tackling issues of digital access and pedagogical competences will minimise the fifth risk, that is the negative feelings toward innovative methods of teaching/learning.

3. Risk treatment

a) General

Risk treatment involves finding the best ways to tackle the risks we have identified. This means that we need to:

- find, form, and select the risk treatment options
- plan and apply the treatment
- evaluate the success of the treatment
- evaluate whether the remaining risk can be accepted, or further treatment is required. In that case, we repeat all the previous actions again

b) Selection of risk treatment options

To find and choose the most suitable ways of treating the risks, we need to compare the benefits with the efforts and cost of implementation. Risk treatment options are context-specific, which means that their appropriateness is based on the circumstances under which they appear. Indicative examples of options are the following:

- avoiding the risk by deciding not to start or continue with the activity that causes the risk
- taking or increasing the risk, for an opportunity to arise
- removing the risk source
- changing the likelihood
- changing the consequences

- sharing the risk (e.g., through contracts, buying insurance)
- retaining the risk by informed decision

Multiple factors may affect the final decisions. Among others, these are financial reasons, obligations, available resources, the commitment needed, the views of the people involved. The latter is important, and it includes extensive consultation with all internal and external stakeholders, for example, students, parents, teachers/trainers, leaders, partners. There is a difference in the degree a treatment is accepted by the stakeholders involved. Along with that, the impact of the treatment varies, and the outcomes produced differ, since new risks may emerge. Integrating monitoring procedures assist in measuring the effectiveness of the treatment applied and prompt further actions for a new cycle of risk treatment to begin.

In our case, we cannot avoid treatment or remove the risk source that is the multiple disruptions and challenges of learning due to crisis situations. For the risks we have identified and analysed, we could select the following treatment options:

- **issues of access/digital exclusion:**
digital competence and technical skills of all participants: staff, teachers/trainers, students
students' support: appropriate equipment- digital devices, Internet access
accessible online learning programmes
personalised instruction
- **lack of pedagogical competences:**
training opportunities
communities of practice for teachers
- **decreased motivation, engagement, and self-regulation:**
effective course design
self-regulation strategies
- **data protection and privacy issues:**
GDPR, policy and regulations
- **ineffective digital communication:**
communication plan

c) Preparing and implementing risk treatment plans

Having the options in mind, we can proceed to prepare the plans that we will implement including the specific actions and steps to be taken. We have to describe:



- the rationale for selection of the treatment options, including the expected benefits
- those who are accountable and responsible for approving and implementing the plan
- the proposed action
- the resources required
- the performance measures
- the constraints
- the required reporting and monitoring
- the timeframe: when actions are expected to be taken and completed

Digital exclusion

To tackle issues of digital exclusion, we have selected options that focus on the opposite: **inclusion, accessibility, and equity** (access to the Internet, digital skills). For this responsible are mainly the leaders and teachers/trainers as needed we are involved in the strategy to be designed and applied. The actions we can take are the following:

- ✓ **Digital competence and technical skills.** Teacher development programmes and training. This should be prompt and individualised since teachers' needs differ. We can promote continuing professional development within our organisation by providing in-house opportunities (e.g., webinars, face-to-face workshops) or external opportunities (e.g., accredited courses, MOOCs). For example, [the Microsoft Education Centre](#) includes multiple training courses in these areas. Professional development and lifelong learning need to be part of the job role and position, recognised, and rewarded, respectively. For example, training within the working hours or credits/ECTS awards/digital badges for the completion of training. A performance review procedure can help teachers identify the areas that need improvement, to attend training later that will meet this need.
- ✓ **Students' support.** To build students' competences we can incorporate learning activities that focus (on a primary or secondary level) on digital literacy (e.g., problem-solving, online safety, content creation) into the curriculum. Additionally, we can provide additional training in this area, within the school hours or outside school hours, with relevant recognition (e.g., ECTS, extra grades) as needed. Guidance is also needed with easy to access support teams.
- ✓ **Appropriate equipment:** digital devices, Internet access. To minimise the digital divide, we can invest in providing students with options for portable devices/take-home technology. This means either lending or giving devices for the online part of the instruction. Regarding face-to-face instruction where it happens (e.g., blended

learning) we can promote the Bring Your Own Device approach (BYOD), according to which students can use their own devices in the classroom. This can lead to better resource management since those who have access to suitable equipment can make use of it while the school resources (e.g., laptops, tablets, PCs) are used by those in need. Supporting digital equity requires that all have Internet connectivity. On the one hand, the Internet at school should be reliable and stable. We can have specific rooms for students who want to complete the online instruction either when the online or blended learning model is followed. On the other hand, for Internet connectivity at home, we can collaborate with the local communities in findings ways to increase access to the community Wi-Fi hotspots.

- ✓ **Accessible online learning programmes.** To design courses that are accessible to everyone, we can consult the [Equal Access: Universal Design of Instruction](#) which includes detailed practices. Since online/blended learning is technology-mediated, having [assistive technologies](#) integrated supports accessibility based on individual needs.
- ✓ **Personalised instruction.** The education provided to students should respond to their preferences, interests, and needs. This requires flexible learning environments for skills development. For this, we can incorporate individualised learning plans: with the support of school counsellors and teachers, students attend courses and activities based on their needs and preferences. The plans may include core courses that are the same for all and additional ones, taken by students based on the emerging needs. For instance, an advanced student will be able to proceed to more demanding courses even if they do not correspond to the grade/semester in which s/he is enrolled. Personalized learning includes notions of differentiation in the instruction which refers to steps taken to diversify the instruction and include learners, catering to their differences.

Pedagogical competences

Apart from digital skills, teachers need to know how to teach online. To strengthen the in-service teachers' pedagogical competences, we can focus on appropriate training and the power of community.

- ✓ **In-service teacher training.** Upskilling teachers' skills is an important step towards designing and delivering effective online courses. Training can focus on teaching pedagogical models such as TPACK (Mishra & Koehler, 2006) and online teaching methodologies such as the Community of Inquiry framework (Garrison et al., 2001). The European Commission has also proposed the [DigCompEdu](#) as a framework that

describes the necessary competences that educators should have, focused on the ways digital technologies can promote innovative teaching and learning.

- ✓ **Communities of practice for teachers.** Professional development can also be achieved indirectly, through the communities and networks that the teachers build. A community is a group of individuals with common goals to achieve, working together to achieve them by creating and sharing appropriate tools (Wenger, 1998). For this, teachers need to collaborate with internal and external colleagues and practitioners in the field, within a community, exchanging tips, material, and best practice examples.

Decreased motivation, engagement, self-regulation

Various factors affect the degree of motivation that students have during learning, such as the design of the programmes, the learning activities required, the workload, the relationship with all those involved, etc. Motivation can be enhanced through external factors (extrinsic motivation) such as degree qualification or internal/emotional desires (intrinsic motivation), such as learning to improve yourself (Ryan & Deci, 2000). We can incorporate strategies that promote both types of motivation in our course design.

- ✓ **Course design: Motivation models.** The ARCS model of motivation (Keller, 1987) outlines that once Attention, Relevance, Confidence, and Satisfaction are achieved through course design, the participants' motivation is strengthened. For Attention we can focus on inquiry-oriented activities, with humoristic content, challenging topics, multimodality, and variability. For Relevance, teaching should be aligned with students' goals and motives, drawing from their experiences. For Confidence, the learning requirements should be known from the very beginning while students have both opportunities to succeed and control over the learning process. For Satisfaction, any rewards, positive feedback, opportunities to apply the newly acquired knowledge, and equity in terms of student rules are crucial strategies. When designing courses/programmes, we should include extracurricular activities to encourage holistic participation. For example, online team projects and volunteering, cyber-cafes, coffee breaks, etc.
- ✓ **Self-regulation strategies.** Apart from being motivated and engaged, students need to learn how to regulate their learning. Students that are self-regulated use metacognition (think how it is best to achieve a goal, assessing the strategies used), motivation (focus on the goal and mission to achieve), and behaviour (the specific "positive" behaviours that will lead to successful completion of tasks/goals) (Zimmerman, 2011). Guidance is crucial for self-regulation. We can offer (online) office

hours and 1-to-1 coaching while improving students' time management skills. Additionally, the course we deliver should include the following:

- study plans, clear study guides and instructions
- systems to track deadlines and timelines (e.g., calendars)
- progress bars, completion status
- support and discussion (e.g., forums, chats)
- checklists for tasks to complete (e.g., assignments, readings)
- rubrics and exemplars (e.g., example answers)

✓ **data protection and privacy issues.**

To ensure all participants' safety, we have to develop and put in place a data protection policy, in line with the [GDPR rules](#) of the European Commission. The software we integrate follows specific privacy policies we have to read through. Along with that, we need to:

- use antivirus programmes
- get written permission for private information
- use strong passwords that are often reset
- make backups of data
- learn and teach students how to work safely and responsibly when online (e.g., how to react to suspicious files, delete accounts, spot malicious programmes, behave responsibly, etc.)

✓ **ineffective digital communication**

In online learning, the physical distancing among the group members coexists with a "transactional distance", a psychological distance due to lack of constant online presence, dialogue, and structure. In an education organisation, cooperation is important for all stakeholders: students, parents, trainers, leaders, support staff, providers, policymakers, learning designers. Organisational communication includes, among others:

- collaboration among colleagues, staff, partners
- information about learning programmes offered
- communication with students (information, resources, tasks)
- announcements and information on processes, regulations, events.
- effective use of digital means such as LMS, VLE, and tools

Having a plan to collaborate internally and externally with all, is a prerequisite for effective dialogic, communication. It increases motivation, participation, engagement, efficiency, and problem-solving, in any upcoming issues. Before constructing a new plan, make sure that you:

- review existing measures and systems used internally/externally (e.g., how often you communicate, through which means) to spot any gaps or inconsistencies
- research new approaches and tools that can support digital communication (e.g., new platforms)
- revise the measures and systems, based on the new approaches

These first steps are part of a brainstorming procedure to find out what is missing and what else is needed. When preparing your strategic plan make sure that it is linked with your organisation's overall mission, goals, values. The plan needs to include the following:

- description of the task/purpose: e.g., teachers' organisation of upcoming classes, teachers' meetings to decide on a new initiative, updates on students' community interests, discussion with partners for new software
- audience: who is involved, e.g., teachers and staff, students, partners
- time allocation/ frequency: e.g., every Monday, weekly, etc.
- medium, such as the specific platform or tool: e.g., teleconferencing (ZOOM, WebEx, Google meets)

4. Monitoring, reviewing, reporting

The last steps of the risk management process, refer to continuous monitoring and proper documentation. Monitoring and reviewing are integrated throughout the implementation of the treatment options. It can involve interviews, surveys, reports that aim to gather data that show the effectiveness of the treatment applied. Such data ensure quality and provide insights into revisions. Lastly, through reporting, we aim at sharing information about the risk management activities implemented and the outcomes derived and further decision-making for improvement.

Chapter 3: Education Continuity Strategy

The disruptions that may occur during the learning lifecycle can derive from physical and biological destructions (e.g., the pandemic). There are mainly three scenarios of disruptive cases for which we provide the following solutions:

1. **Scenario 1:** No disruption occurs, there are no restrictive measures. Exceptions may appear (e.g., individual learners or teachers need to quarantine/be absent),

- Teaching substitutions for face-to-face operations
 - Face-to-face presence with live streaming
 - Individual learners take up online courses to follow up
2. **Scenario 2:** Partially restrictive measures, face-to-face operation for only lab/practical courses
 - Hybrid (partly online, partly face-to-face for lab/practical courses) with Live streaming
 3. **Scenario 3:** Partially restrictive measures, face-to-face for a restricted number of attendants
 - Hybrid mode of teaching and learning (partly online, partly face-to-face) with Live streaming
 - Reduced number of class sizes, attending face-to-face sessions in alternating periods.
 4. **Scenario 4:** Face-to-face operation is prohibited
 - Fully online/distance mode of teaching and learning

In these scenarios, additional challenges may affect the process that is normally conducted throughout a learning programme: application, admission, registration, learning/teaching, assessment, and graduation. We cannot predict all the potential obstacles that will appear but having an emergency response strategy in place allows for a continuation to be achieved in our VET training programmes to be delivered in an online or blended mode. In the tables below, we present the strategic actions and processes that we need to follow on an organization level (Table 3) and a learning programme/course level (Table 4) (Dayagbil et al., 2021; Rasiyah et al., 2020)

Table 3. Ensuring a resilient VET organisation

Planning/Leadership	A team of experts has come together to handle emergencies. All stakeholders (internal-external) are involved in decision-making.
	There are substitute teachers/trainers as part of the staff to be able to respond as required (e.g., absence of a teacher).
	Modifications and flexibilities in terms of timeframes and procedures (e.g., an extension of deadlines or semesters) are possible.

	There is an online portal complementary to physical departments to handle all procedures including registration, online payment, and organisation.
	Classroom setups are appropriate for potential physical distancing (e.g., student cubicles, individual study rooms).
Technology	There is an evaluation of the number of people who need technical equipment and devices. At the beginning of the school year/learning programme, we evaluate the situation (e.g., students' access) through discussions/interviews and/or questionnaires, to provide those in need with appropriate equipment (e.g., portable devices on loan)
	Alternative technologies and means to access them (e.g., low tech) are in place, for a continuation of the work done through the LMS, in case of disruptions. These can be alternative teleconferencing tools, online collaborative workspaces, messaging tools, etc. Define the characteristics and possible limitations of the tools currently used to find alternative options.
	Internet access at home is ensured. This can happen through broadband connectivity from local internet service providers or cellular networks. At the beginning of a learning programme, evaluate students' degree and extent of access to help, as required. Scholarships can be provided (e.g., monthly Internet stipend)
Curriculum	<p>Curriculum and syllabi incorporate flexibility through customized learning plans. This action covers mainly the following: (a) students attend additional (online) subject courses to improve performance within a programme, (b) students complete additional tasks to improve performance within a subject course, (c) students complete differentiated tasks (e.g., assignments) based on emerging needs within a course (e.g., inability to conduct a field experiment). To achieve this, we can:</p> <ul style="list-style-type: none"> • prepare and host on-demand self-paced, online, courses (e.g., video recordings, automatically corrected activities) for students to attend at their own time, along with 1-to-1 clarification meetings with the trainer as needed. This can be achieved through A La Carte blended learning model (see Chapter 2- Unit 1) • allow students to attend courses that are running • prepare learning and assessment activities additional to the ones designed, considering the learning needs • prepare learning and assessment activities alternative to the ones designed, considering the learning needs

Support	Reskilling, upskilling, and cross-skilling is promoted through appropriate training (e.g., webinars, recorded sessions, etc.) to adapt to any new situations.
	Technical teams assist remotely (e.g., helpdesks, online meetings, software to access the devices if needed). Technical teams should also train participants on the use of the organisation's tools.
	Mental health and educational support are available. Students could access support teams/departments to receive guidance, enhance their strengths, manage potential stress, sustain their well-being, and/or resolve conflicts. Career guidance/counselling should also be included. Guidance should also include self-regulation techniques so that students know how to complete learning tasks at home (e.g., time management, organisation,
	Links and connections with the industry are made. Since new working conditions and/or job roles emerge, alliances with the business industry will support the transition from education to working life. This includes training opportunities and mobility programmes which can also be remote/and or virtual for continuation purposes.
Communication	There is an appropriate communication method for all participants to be in contact on time before, during, after a disruption may appear (e.g., a protocol of how this communication will be done).
	Virtual consultation platforms exist along with physical departments (e.g., helpdesks, , group chats).

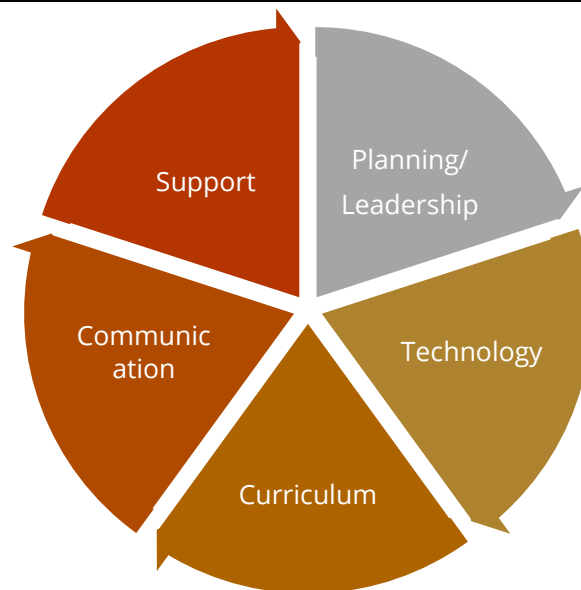


Figure 9. Sections of actions on an organization level

Table 4. Ensuring resilient online/blended learning programmes

Technology	Access to equipment is granted. There are portable devices students can take home, there are labs/classes for small group/individual work.
	Backups of paramount data such as course guides, gradings, contact details, assignments, exams) are made and such documents are also available in hard copies.
Digital content	Learning material can be downloaded and/or printed to study offline, in case of network issues. There is flexibility with the provision of digital resources through electronic library services.
	Learning content is compatible with various devices (PCs, mobile apps, tables etc.).
	Faculty and students both maintain critical resources and products (syllabus, completed assignments, contact information, and in the trainer's case, grade book) in hard copy, offline.
Teaching and learning procedures	Synchronous online sessions are recorded to be available 24/7. We have the participants' written permission for usage of the recording, and we hide personal/private information (e.g., names of students).
	Lectures/synchronous face-to-face sessions are recorded for live streaming and video sharing, integrated into the LMS, for students who are unable to attend (watch it synchronously or asynchronously). There are multiple tools for this purpose, such as Panopto . We have the participants' written permission for usage of the recording, and we hide personal/private information (e.g., names of students).
	Class size is reduced, as needed. For instance: <ul style="list-style-type: none"> A class is split into two groups: the first is attending a teaching session face-to-face, the second is attending online/through live streaming. A class is split into two groups: the first is attending one half of the teaching session, the second attending the other half face-to-face. An additional online session is scheduled for both groups.
Support	Strong online communities of students are created. This means that students will be in constant contact during a period of crisis, communicating seamlessly to support and provide advice (e.g., in terms of learning, technicalities) to those in need.

	Coaching and mentoring methods are established. Guidance can be provided through office hours (e.g., online/face-to-face 1-to-1 meetings), and/or through mentorship programmes among students (e.g., online or face-to-face buddy programmes, clubs).
Assessment/validation of competencies	<p>Expectations, requirements, grading system should be clear to all participants from the very beginning. This includes communicating:</p> <ul style="list-style-type: none"> the expectations for participation, assignments, and exams the appropriate behaviour the requirements to pass courses rubrics for assessment and grades formatting of assessment (e.g., number and type of questions, length, and time taken for the answer(s), open or closed books). <p>Students can also practice using checklists to assess themselves and each other before an examination, based on core criteria. Written agreements between the teachers/trainers-students indicating their respective responsibilities, should be signed.</p>
	Preparation of students is conducted through an initial assessment of their needs (e.g., equipment, skills to use the devices) and mocks/ drive tests of final exams (e.g., test courses to experiment with online submissions, granting of access to platforms/tools etc.). Timing can be flexible (e.g., two exam times for different time zones, additional hours for typing purposes/ technicalities to be solved). Clear, written instructions are given while support teams are available throughout the exam date.
	Assessment is flexible and focused on learning outcomes and competences. Apart from closed-ended tests, we can include an alternative assessment that minimises the risk for cheating: digital portfolios that require originality, group work projects, presentations of work, take-home exams with changes in the grading system (e.g., allocation of more grades to the participation).
	Transparency, integrity, reliability in remote testing, examination, and evaluation is guaranteed through invigilated examination. Proctoring software can track any “malicious” or “suspicious” actions and attempts (e.g., opening other tabs, using chats) of students by recording their actions, analysing, and supervising behaviour. Indicative examples of tools: Proctorio , ProctorU . Before using such tools, we need to review the Data and Privacy Policy indicated by the software companies and agree with students through written permission.

	Plagiarism is checked. For online assignments and any work submitted online, there are software tools (e.g., Turnitin) that can be integrated into the LMS to detect any plagiarism issues and ensure originality in students' work.
	<p>The formatting of an examination can minimise the chances for misconduct:</p> <p>(a) questions can focus on testing higher-order thinking skills (e.g., evaluation, critical thinking, deep understanding, synthesis, creation) rather than memorisation;</p> <p>(b) oral recorded tests (e.g., 1-to-1 interviews) can be used as a complementary method to detect students' level of knowledge, skills, attitudes, and originality of work. The evaluator can inspect the surrounding area to verify if any prohibited medium is used;</p> <p>(c) open books/notes exams can be used when possible, asking students to exhibit a higher level of understanding and critical synthesis of the specific content learned/skills acquired.</p>

For the above, a clear plan needs to be co-designed by the leaders, teachers/trainers, and students, mentioning the steps taken in case of disruptions. Having students on board allows us to identify any medium they use to access material, the available equipment they have and are willing to use. The plan should include the expectations and alternative options (Table 5). Indicative examples we may face:

- in case of lack of access to the reading material due to Internet connection issues, the reading material is available in hard copies through our library.
- in case of inability to attend the synchronous online session, the recording will be made available within 24 hours upon completion.
- in case of inability to attend the synchronous face-to-face session, there will be live streaming available through our LMS, and the recording will remain available at your disposal.
- in case of inability to participate in the course for a specific time (e.g., 2 weeks), adaptations are in place, such as change of collaborative activities to individual format, opportunities to submit work (and additional tasks) on a later stage. These will not affect the grade.
- in case of inability to participate in the course for a long period of time, students will be able to reattend it, customising their learning plans.

Table 5. Planning process during cases of disruption

Case of disruption	Situation/task affected	Alternative option
<i>e.g., Internet instability</i>	<i>e.g., Reading learning material online</i>	<i>e.g., Material is available in hard copies/can be downloaded for offline view</i>

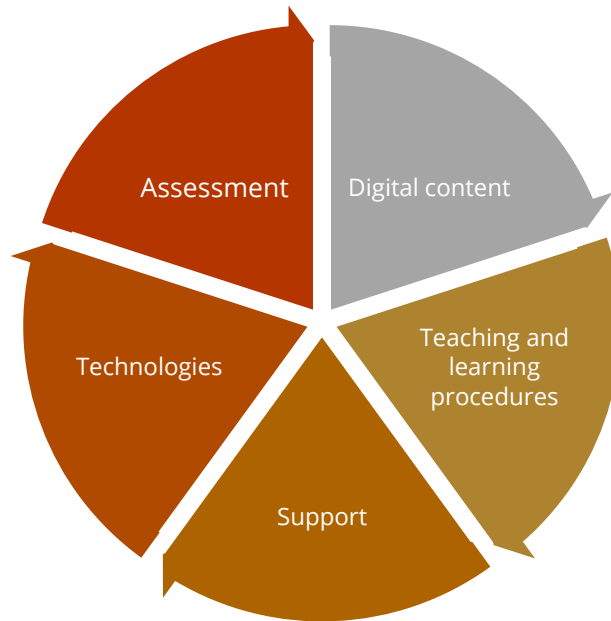


Figure 10. Sections of actions on a learning programme/course level

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Annex 1

Business Impact Analysis process

Metadata	Version XX.YY	01.00
	Information classification	Internal
	Document category	Process
	Status	Draft
	Owner of information	TBD
	Within responsibility of	Training Continuity Responsible Role
	Approval authority	TBD
	Date of approval	DD.MM.YYYY
	Date of issue	DD.MM.YYYY
	Period of review	2 years or in case of significant changes
	Audience	TBD
	Entity	TBD
Purpose and motivation	The Business Impact Analysis (BIA) process is a key component of Business Continuity Management (BCM) and in particular Training/Education/Learning Services Continuity.	
	BIA is designed in accordance with to ISO 22301 Social security – Business Continuity Management Systems - Requirement to:	
	<ul style="list-style-type: none"> Identify vital training functions and their dependencies; Define recovery requirements for training services. These requirements include Recovery Time Objectives (RTO), Recovery Point Objectives (RPO) and Minimum Business Continuity Objectives (MBCO) for each training service. <p>The BIA aims to help identify:</p> <ul style="list-style-type: none"> Business requirements, impacts and risks regarding training services; The scope of the BCM program; Business Continuity Management Strategy; What are the critical training services and what is a major incident for these services; Acceptable levels and times for training service interruptions; Critical periods for business and training services; 	

-
- The cost of loss of training service;
 - The requirements for the levels of training services to be included in the SLA.
-

The BIA process can be applied:

Scope

- For Training/Education/Learning products, services and groups of products or services;
 - For new and changed training services;
 - For planned risk reassessments in the continuous improvement cycle.
-



Annex 2

Business Impact Assessment Matrix

The purpose of this matrix is to provide directions along the Educational Business Impact Assessment. Justify it to your training/ educational organisation specific.

	Financial impact - quantitative	Financial impact - qualitative	Reputational impact	Legal Compliance	Clients withdraw from their contracts and the training organisation cannot attract new ones	Delaying important projects or launching new educational products and services	Opportunity for competitors
Critical	Over €1 million	Individual / accumulated risks that may threaten the existence of the training/educational organisation	Negative media coverage for more than 28 days Dramatic loss of stakeholder confidence	Loss of license for the activity, maximum sanctions, serious lawsuits	Loss of critical mass of customers/students that cannot be compensated by new customers/students	Tolerances of important projects have been violated, early termination of projects. Impossibility to launch new educational services.	Competitors position themselves first in a new segment and conquer a dominant share of the segment
High	TBD	Individual / accumulated risks that may threaten the achieving the goals of the training/educational organisation	Negative media coverage for more than 7 days Serious loss of stakeholder confidence	License restriction, high sanctions, lawsuits	Loss of many important customers, partial compensation by attracting new customers/students	Tolerances for projects, significant delays in the implementation or launch of new educational services have been violated	Competitors position themselves first in a new segment and conquer a high share of the segment
Medium	TBD	Individual / accumulated risks that may threaten the achievement of the objectives of a process with a financial / reputational effect related to the process	Negative media coverage for more than 2 days Moderate loss of stakeholder confidence	Medium sanctions, medium sanctions, lawsuits	Loss of a moderate number of customers/students, partial compensation by attracting new customers/students	Moderate delay in project implementation and launch of new educational services	Competitors conquer part of the training/educational organisation market
Low	TBD	Individual / accumulated risks that may threaten the achievement of the objectives of a process with a financial / reputational effect related to the process	Negative coverage in the media less than 2 days Minimal loss of stakeholder confidence	Regulatory requirements are not strictly followed, but general practice, low or no sanctions apply	Insignificant loss of customers/students, which is compensated by attracting new customers/students	Slight delay in projects and launch of new educational services	Low opportunities for competitors



