

DEVELOPMENT OF QUALITY ASSURANCE MECHANISMS IN VET E-LEARNING ENVIRONMENTS (PERCEIVE)

DESIGN OF THE VET E-LEARNING QUALITY ASSURANCE FRAMEWORK

Intellectual Output 2

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LEAFLET WITH LINKS FOR THE PERCEIVE QUESTIONNAIRES

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Intellectual Output 2
(Activity 1, Activity 3)

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1. Introduction

The main concept of the PERCEIVE Project is the development of a Quality Assurance Mechanism for the evaluation of e-learning programmes in a VET environment. As it has been highlighted in the first Intellectual Output of the project, the delivery of e-learning experiences by educational institutions has been brought to the spotlight, after the first wave of the Covid-19 pandemic. The change from the conventional means of teaching to the use of online resources for the design and delivery of e-learning solutions brought to the surface the inequalities among large, regional, and local VET providers, as the latter showed signs of little technology integration.

During the first months of the PERCEIVE implementation, the partnership conducted an in-depth field and desk research, in order to identify the main aspects, topics and functions that need to be addressed by a Quality Assurance Framework. The focus of the research was existing quality assurance frameworks, both in the field of VET and higher education. An expert consultation was also organized with respective stakeholders, so as to validate the research results. As there are no other frameworks that target online learning programmes which are also widely used, the PERCEIVE framework is an innovative initiative, aiming to cover the gap of quality assurance in a VET online environment.

As part of the second Intellectual Output, the partnership put to paper the findings of the previously implemented activities and created the outline of the PERCEIVE Framework. This outline is comprised by three different Axis, which are the following:

1. Teachers and Staff
2. Students
3. Context

These three Axis provide the basis for the development and analysis of the twelve Aspects that are addressed by the framework. In detail, the aspects refer to the processes and procedures that a VET institution need to evaluate in order to assess the quality of an online course. Within this context each aspect is analysed through the three following components:

1. Processes and Procedures: In this section, the main topics that are addressed by the specific Aspect are analysed. This part acts as a guideline that will assist the person responsible for conducting the quality assurance process, within the institution, to identify all the areas that need to be evaluated.
2. Actors: In order for an e-learning course to be evaluated, certain actors need to be involved in the quality assurance process. Therefore, these individuals are mentioned in the PERCEIVE Framework, along with their role and function in the process.
3. Monitoring System: This is the most crucial part of the framework. It includes all the necessary Key Performance Indicators, along with their targets and their means of verification, that are necessary in order for a programme to be deemed of high quality.

In the report below, the first version of the PERCEIVE Framework is presented and analysed.

2. The PERCEIVE Framework

2.1. Teachers and Staff

2.1.1 Support

Processes and Procedures:

The coronavirus pandemic acted as a catalyst for digital teaching and learning implementation. In this scenario, a large portion of teachers and staff in schools and VET centers often found itself lacking in specific digital competencies vital for the delivery of classes/lectures and for the carrying out of daily tasks at the administrative level.

In such evolving digital educational space, requiring correspondingly digital and technical competences from teachers, trainers and administrative staff, it is crucial for schools and VET centers issuing e-learning curricula to dispose of a multidisciplinary team that could help the staff in the production of courses and materials, and in the operationalization of administrative and technical duties within the educational departments. More specifically, we refer to a kind of support to be implemented at different levels or in transversal key areas: technology, communication, administration, students' support services and at the social and management level.

Moreover, the quality of support provision will have as a consequence, a positive significant influence on student satisfaction and the successful delivery of an online curriculum/programme. For this reason, the utmost importance of support in the e-learning context should be emphasized. Conversely, also the ability of teachers to provide online support of learners involves the effective monitoring of students' progress, anticipation and resolution of key learning questions, establishment and maintenance of relationships. In combination, all these competences can shape the effectiveness of both online instructions and, in turn, the student experience.

Actors:

Teachers and staff: They are staff who are in close daily contact with the students. They are responsible for either delivering the online training and for attending to their various administrative needs.

E-learning content creators: Professional profiles tasked with the development of content for e-courses. More specifically, content creators deal with the tutorials, case-based learning, simulations, and also game based learning modules. Moreover, they use instructional design and pedagogical principles to produce learning objects and instructional materials. Administrative functions such as storing, cataloguing and indexing fall under the area of content management, needed to make e-learning content available to learners.

Administrative staff (librarians, ICTs, counselors etc.): This category of actors refers to librarians, counsellors, receptionists and back-desk employees, all segments of the administrative body of

schools/VET centres. In this context, their expertise should cover the proper management of portals, repositories, digital libraries, learning-management systems, search engines, and e-Portfolios.

Facilitators (e.g. multidisciplinary support team): Multidisciplinary (and non) support teams act as a backup in the establishment of e-learning and m-learning (mobile learning) for both students and teachers/trainers.

Specialised developers: They are responsible for preparing the online platforms to be used, while also monitoring their functionality, throughout the academic year. Examples of professional profiles are developers and designers of online environments

Monitoring System:

The Monitoring System should include Key Performance Indicators to measure:

- A. Assessment of teachers and staff readiness for e-learning
 1. Ability of teachers and trainers to deliver online classes/lectures
 - i. **Target:** 90% of classes seamlessly implemented
 - ii. **Means of Verification:** Teachers and students satisfaction survey
 2. Readiness of VET/schools institutions to provide training to teachers/trainers/staff
 - i. **Target:** At least 2 trainings available on demand for teachers and staff
 - ii. **Means of Verification:** Training material uploaded on the institutional server/platform, teachers/ staff satisfaction survey
 3. Opportunities for teachers and staff to stay up-to-date on the latest trends and techniques in online education
 - i. **Target:** At least 1 info-session organized every year
 - ii. **Means of Verification:** agenda of the event, pictures, participants list
- B. Existence of sufficient resources and manpower responsible for supporting teachers in the correct implementation of an e-learning system.
 1. Establishment of manpower/task forces within schools/VET centers
 - i. **Target:** at least 1 supporting team in each school/VET department, comprised by technicians
 - ii. **Means of Verification:** list of staff employed in the team, official records of the institution
 2. Existence of open ad-hoc guidelines addressed to teachers and staff for the use of IT tools and platforms
 - i. **Target:** 1 document to be published and updated every year
 - ii. **Means of Verification:** document of updated guidelines for teachers and staff

3. Provide teachers and staff with access to hardware and software for the delivery of online education
 - i. **Target:** All teachers have access to microphones, cameras, computers, and internet connection
 - ii. **Means of Verification:** satisfaction survey of teachers, accurate identification of equipment needed
4. Implementation of an adequate and effective help-desk service for teachers and staff
 - i. **Target:** 70% satisfaction
 - ii. **Means of Verification:** satisfaction questionnaire to be filled after receiving the service by teachers

2.1.2 Qualifications and Prior Experience

Processes and Procedures:

VET teachers and staff require a complex set of skills, which they need to constantly keep up to date. Teachers face considerable demands, including expectations to successfully manage classrooms and gains in student learning. The skill needs of VET teachers are diverse and increasing, as in the common case the VET teachers need dual competences. On the one hand, they need to have theoretical and practical knowledge of the subjects they teach, and regularly update this expertise in response to changes in technology and working practices. They are often also required to have relevant profiles and work experience. On the other hand, they need to have pedagogical skills to effectively share their knowledge and experience with a diverse group of students.

A changing environment for teaching and learning, including the increased use of digital technologies for teaching during the COVID-19 pandemic, also requires VET teachers to have a wide range of transversal skills, including digital and soft skills. However in the general case the initial education and training for VET teachers appears to be weaker in developing the required pedagogical skills than training for general education teachers. This is even more true for ICT skills and working in an electronic environment. Those VET teachers who benefitted in their initial education and training from training in specific teaching responsibilities or tasks (e.g. general pedagogy, subject-specific pedagogy, subject content and classroom practice) are found to feel more prepared for taking up these responsibilities in their teaching. VET teachers need the skills and support to incorporate new technologies and pedagogies in their teaching practices.

The use of technology in VET teaching has increased in recent years, and was further boosted during the COVID-19 pandemic. Distance learning at school provides many opportunities, but also poses challenges. Evidence suggests that VET teachers make more use of digital technologies than general education teachers. Nevertheless, a large proportion of VET teachers are not well prepared to teach using advanced technology in digital environments. Moreover, a significant share of teachers – and especially older ones- do not feel confident in the use of digital technologies for teaching, preparing lessons, communicating with parents and providing feedback.

Leaders of VET institutions play a crucial role for high-quality VET provision, but they are often not prepared for the diverse leadership responsibilities. Leadership is becoming more important for the success of VET institutions. Institutional leaders in VET play a crucial set of roles, from recruiting and developing teachers to ensuring the quality of teaching and learning. They are also responsible for managing resources and engaging employers and other stakeholders. All those aspects are relevant in the same way to the regular and the online learning processes.

In the Aspect of the Qualifications and Prior Experience of Teachers and Staff it's essential to consider that:

- There are no common standards which to be used as verification for the ICT literacy, including competences of the teachers and staff that is to deliver the e-learning.
- It is difficult to retain highly qualified teachers. Great percentage of VET teachers have not participated in credentialing and upskilling programs. The problems are further exacerbated by the general ageing of the teaching force in secondary education.
- The specifics of the face-to-face teaching especially in VET can be challenging for direct transfer online. Teachers are to have competences to prepare a digital lesson (for new knowledge and control of the learned material; for practice and control of the learned material; developed/adapted for students with special educational needs) on a topic of the curriculum content of a specific subject for a specific grade.

In summary, when evaluating the quality of the Aspect of Qualifications and Prior Experience of Teachers and Staff, the following topics should be considered:

- Range of digital tools that are used in a face to face/regular learning process.
- Level of confidence of the teachers to apply and use digital technologies in the learning process.
- Level of institutional preparedness – resources allocated, training, equipment.
- Validation of skills and qualifications more visible and comparable

Actors:

The vocational education and training system prepares citizens for in the economy and other spheres of social life by creating conditions for the acquisition of professional qualifications and their continuous improvement. Since the tasks of the VET systems and the structures in each country differ the common elements that are to unite them are the actors – teachers/trainers/facilitators and staff that are responsible for the delivery and organization of the learning and e-learning process.

VET teachers/trainers/facilitators and practitioners related to the VET curricula: they are the main actor in evaluation of the quality of the aspect of Qualification and previous experience as in most of the cases the “qualification” as such may be result of a life-long learning and self-learning and not necessarily related to a specific formal course and formal qualification/recognition. Therefore regarding the estimation of the level of qualification the most important actor will be the VET practitioner and his/hers self-driven development desire.

VET leaders: such as school-based provision, work-based learning, apprenticeships, formal, informal and non-formal provision, in both public and private institutions are the one that are to support and prepare the strategies for qualification and be actively involved in the VET system improvement, including the teacher's/trainer's qualification and acquisition if needed competences.

Students: the students and their results are also indicative to measure the level of quality of education provided, related directly with the way they are receiving and supported to elaborate the main learning information.

Monitoring System:

The Key Performance Indicators (KPIs) for this Aspect will be used to measure and evaluate the current preparedness and qualification of the VET practitioners, institutions and supportive staff of the e-learning provision, ensuring the achievement of the long-term adaptation and application e-learning programmes in the 3 areas:

- A. Theoretical and practical knowledge of the subjects teachers teach and their ICT literacy, including competences of the teachers and staff that deliver the e-learning.
 1. Level of confidence of the teachers/practitioners for teaching and transferring knowledge
 - i. **Target:** At least 90%
 - ii. **Means of verification:** Teacher's/practitioners anonymous feedback form
 2. Level of confidence for working in an online environment
 - i. **Target:** At least 90%
 - ii. **Means of verification:** Teacher's/practitioners anonymous feedback form
 3. Number of tools that the teachers can apply in an online learning environment
 - i. **Target:** At least 3
 - ii. **Means of verification:** Teacher's/practitioners anonymous feedback form
 4. Level of competence of supporting staff (i.e., ICT, Administrative personnel) in handling e-course related issues
 - i. **Target:** At least 90%
 - ii. **Means of verification:** Student satisfaction survey, staff's prior training programme certificates
 5. Level of motivation of teachers to teach in an e-learning environment
 - i. **Target:** At least 60%
 - ii. **Means of verification:** Teacher's/practitioners anonymous feedback form
- B. Retention of highly qualified teachers.
 1. Percentage of VET teachers participated in credentialing and upskilling programs.
 - i. **Target:** At least 90%
 - ii. **Means of verification:** Teachers' certificates, teachers' CVs
 2. Years of experience in VET teaching

- i. **Target: 0**
- ii. **Means of verification:** Teacher's/practitioners anonymous feedback form, teachers' CVs

2.1.3 Professional Development and Upskilling

Processes and Procedures:

A significant concern for VET is the further development of teachers and trainers, which has been identified as an essential ingredient for ensuring a more attractive VET which keeps pace with a rapidly changing labor market and working environment. Strong initial teacher training and opportunities for professional development are always needed. Effectively preparing and developing VET teachers requires well-designed initial teacher education and training and professional development opportunities.

VET teachers also need access to opportunities for professional development throughout their career to make sure they keep their knowledge and skills up to date. The most common forms of professional development for VET teachers are participation in courses or seminars and reading professional literature. Nonetheless, a significant share of VET teachers faces barriers to participation in professional development due to a lack of support and incentives or conflicts with their work schedule. Even VET teachers who were able to participate in professional development still felt strong barriers that prevent them from accessing training opportunities. In many countries, participation in professional development is voluntary or dependent on senior management decisions, but some countries make it mandatory by law in order to ensure their participation. Making sure that VET teachers receive the necessary training – whether it be on pedagogical, industry or technological aspects of teaching – requires collaboration and co-ordination of multiple stakeholders at different levels, from VET institutions to teachers' and school networks, local companies, universities and relevant associations.

New technologies and innovative pedagogies can foster high-quality VET teaching. Innovative pedagogical approaches can support teachers in developing the digital and soft skills of their students as well as their vocational skills. The increasing demand for digital and soft skills in the labour market means that VET teachers need to foster the development of these skills for them and for their students. New technologies such as virtual/augmented reality, robotics and simulators have the potential to foster innovation in VET teaching and learning. These technologies can provide flexible, cost-effective and safe ways to promote learning. They help both teachers and students develop technical skills, but also soft and digital skills.

In order to integrate new technologies into their teaching, VET teachers need to receive support to further develop their digital skills and knowledge about technology used in industry. Other support measures can complement professional development opportunities, including peer-learning networks and strategic guidance from institutional leaders on how to integrate new technology into teaching.

To apply innovative pedagogical approaches effectively, teachers need to be familiar with the theoretical foundations underpinning them, as well as proficient in the use of ICT and specific teaching techniques. Raising awareness among VET stakeholders (especially teachers) about the importance of

developing soft and digital skills and adopting new technologies and pedagogical approaches in VET is crucial for fostering more innovative approaches to VET teaching.

Actors:

The Professional Development and Upskilling is an multidimensional aspect and its assessment in the context of the e-VET learning should involve the following actors:

VET teachers/trainers/facilitators and practitioners related to the VET curricula: they are the main actor in the evaluation of the quality of the aspect of Professional Development and Upskilling as their practical needs are to be taken in consideration. Most in most of the cases the desire and motivation of the practitioners is a voluntary driven force for upskilling.

VET institutions: the qualification of the VET staff and the opportunities are in a very strong relation with the policies and the internal organization of the institutions. Both public and private institutions are the one that are to support and prepare the strategies for qualification and be actively involved in the VET system improvement, including the teacher's/trainer's qualification and acquisition if needed competences.

Monitoring System:

The following KPIs need to be measured in order to evaluate the quality of the Aspect of Professional Development and Upskilling.

- A. Ability to keep up to date with the development of the institution and the pace of the labour market
 1. Level of initial training and preparedness for lifelong learning among the VET practitioners
 - i. **Target:** At least one course attended, in the context of lifelong learning
 - ii. **Means of verification:** Teacher's/practitioners anonymous feedback form/ Teacher's annual attestation form, teachers' certificate
 2. Level of validation and recognition of VET practitioners learning opportunities offered by the institution.
 - i. **Target:** At least 1 training/ validation opportunity per year
 - ii. **Means of verification:** Teacher's certificates, diplomas other official documents that certify participation and learning outcomes.
 3. Availability of staff responsible for teaching and supporting students in an online educational environment
 - i. **Target:** At least 2
 - ii. **Means of verification:** Official HR records of the institution
 4. Level of satisfaction of teachers and staff on qualification courses the provided by the institution
 - i. **Target:** At least 70% satisfaction rate
 - ii. **Means of verification:** Teacher's/practitioners anonymous feedback form

B. Access to opportunities

1. Provisioned educational strategies of the VET institution to monitor and update the qualifications of their staff.
 - i. **Target:** 1 Strategy including the necessary staff qualifications
 - ii. **Means of verification:** Official records of the institution
2. Range of measures (internal or external) for the further development of teachers' digital skills
 - i. **Target:** At least 3 per school year
 - ii. **Means of verification:** Official records of the institution, list of (online) courses provided, list of trainings provided, list of other initiatives
3. Research of developments in digitalization and applicable instruments and methods that can be applied in the VET e-learning
 - i. **Target:** At least 1
 - ii. **Means of verification:** Official records of the institution, research report on the digital method to be applied

C. New technologies and investment on institutional and personal level.

1. The extent of digitalization of the learning materials in VET schools
 - i. **Target:** At least 70%
 - ii. **Means of verification:** Official records of the institution, training material uploaded on the platform, assessments uploaded on the platform, exercises uploaded on the platform
2. The percentage of investment for digitalization and IT equipment per school year
 - i. **Target:** At least 2%
 - ii. **Means of verification:** Official records of the institution, platform licenses
3. Percentage of VET practitioners that are equipped with an institutional or personal computer

Target: At least 70%

 - i. **Means of verification:** Official records of the institution

2.2. Students

2.2.1 Admission and Progression

Processes and Procedures:

In general, the admission and progression of the students in an online VET course refers to:

1. The processes and procedures that are followed in order for a student to be admitted to the course (admission criteria, assessment of prior knowledge, selection of a course that is in-line with the student's interests and capabilities)

2. The processes and procedures that are followed to ensure that the students are acquiring the necessary units to progress the course and graduate. In most courses it is the grades of the students that are used to evaluate whether their progression is up to the standards of the course and is deemed satisfactory.

Within this context, there are certain topics that need to be considered in order to evaluate if an online course adheres to high quality standards for ensuring the smooth student admission and progression.

First of all, regarding the admission of the students, they need to be adequately informed about all the requirements and pre-requisites of the course. These requirements refer to both prior knowledge and skills that need to be acquired and to technical equipment that the student is to have in order to be able to attend the course. For example, a computer with an up-to-date software and a stable internet connection are some of the most common pre-requisites for attending an online course. At the same time, specifically in the context of online learning, prior knowledge does not only refer to skills and competences that are specific to the topic of the course, but also digital skills that ensure the active participation of the learner in the educational process. Lastly and similarly to conventionally delivered courses, prerequisites such as prior test scores, diplomas and technical qualifications need to be both clearly outlined and in-line with the actual academic requirements of the course. In other words, the prior knowledge of the students that is required in order for them to be admitted need to be connected with the learning outcomes of the e-course.

These prerequisites need to be well defined and made public through the development of a study guide, which will clearly outline the conditions of admission in the e-learning programme.

It also crucial that the institution that offers the online course needs to have a specific structure and policy in place to recognize prior learning of students coming from diverse educational backgrounds. Due to the nature of online learning, which is not bound to a certain geographical region, e-courses might attract learners from multiple countries and regions, who have completed courses in different educational models and systems. Nevertheless, their acquired skills need to be effectively assessed (i.e., through a preliminary online test). In parallel, the academic recognition needs to be on the same level with other institutions that offer courses with similar learning outcomes. This will ensure that the online courses are as attractive as courses delivered in a face-to-face format, as students are convinced that their effort will be translated to a diploma that is equally recognized in the VET environment.

In addition, in order for the admission to be effective and for the student to be actually interested in joining the online course, so as to minimize the risk of drop-out rates, the pedagogical model to be followed as well as the expected workload need to be clearly communicated to the prospective students. In order to also ensure the smooth progression of the students, the learners need to receive documentation about the skills that have acquired after completing the required assessment at each stage of the course and especially upon graduation.

In the context of student progression, the institution that offers the online course needs to be able to support the learners in the application and development of the new competences and skills both in a theoretical and practical environment. This is achieved through adhering to well specified dates and

times of the assessments and examinations of students, which are shared with the learners well in advance. Additionally, the implementation of mock assessments also boosts the progression rates, as the learners are more informed and aware about the knowledge and skills they need to have acquired before graduating the course.

Since the students and teachers are not physically in the same place during the delivery of the course, the latter need to be able to assess the actual understanding of their learners (i.e., through interactive questions and case studies). Simply logging in to attend the course does not entail that the students are confident and aware of the concepts discussed in class. Therefore, the timely identification of those who are falling behind is crucial for the high progression rates of an e-learning course.

In summary, the main topics that are to be covered by this Aspect are:

- Student awareness on course requirements and workload
- Recognition of prior knowledge, diplomas and certifications
- Support of the student progression by the institution
- Support of the student progression by the teachers
- Engagement of students in the learning process

Actors

Teachers and trainers: are basically responsible of the progression of students. They have the responsibility to support them during the learning process and identify if they are facing any difficulties that could cause a hurdle in their progression.

Administrative staff: have a significant role to the admission of students in the whole procedure of the Training, as they are the staff members that have the first contact with the students, in order to discuss their admission. Their role is crucial for ensuring that learners have access to all the necessary information prior to their admission.

Academic counselors: Due to their expertise they are able to identify the necessary requirements (knowledge, skills, competences) that a student needs to fulfil in order to be enrolled in the course. At the same time, they can match the learning outcomes of the online course with the course pre-requisites, to ensure that the admitted students will be as ready as possible to successfully attend and complete the course.

Technical staff: Their knowledge is valuable to set their ability to set the technical requirements for students wishing to be admitted to the course.

Monitoring System

The Monitoring System should include Key Performance Indicators to measure the level of:

- A. Effectiveness of admission process
 1. Number of course requirements aligned with specific learning outcomes of the course
 - i. **Target:** 100% of course requirements aligned
 - ii. **Means of Verification:** Respective information presented in the information course guide

2. Number of students aware of the course entry requirements (both technical and knowledge ones)
 - i. **Target:** 90% of students
 - ii. **Means of Verification:** Student satisfaction survey
3. Number of students aware of the expected course workload
 - i. **Target:** 90% of students
 - ii. **Means of Verification:** Student satisfaction survey
4. Number of students aware about the course structure
 - i. **Target:** 90% of students
 - ii. **Means of Verification:** Student satisfaction survey
- B. Recognition of prior knowledge, diplomas and certifications
 1. Number of students having completed the online preliminary test on prior knowledge (applicable to students whose educational background is not already recognized by the institution)
 - i. **Target:** 100% of students
 - ii. **Means of Verification:** Tests completed
 2. Level of alignment of the course requirements with same-level F2F courses
 - i. **Target:** 70% of course requirements
 - ii. **Means of Verification:** Study guide, preliminary research report on curriculum development
- C. Institutional support for the progression of students
 1. Number of students aware about the pedagogical model and the expected skills and competences to be acquired after the course completion
 - i. **Target:** 80% of students
 - ii. **Means of Verification:** Student satisfaction survey
 2. Number of students having understood clearly the structure of the course (academic calendar, dates of examination, course educational milestones)
 - i. **Target:** 80% of students
 - ii. **Means of Verification:** Student satisfaction survey
 3. Number of mock assessments per course
 - i. **Target:** At least one per course
 - ii. **Means of Verification:** Mock test paper, completed mock tests by students
- D. Support of the student progression by the teachers
 1. Number of informal assessments of the students understanding during the course
 - i. **Target:** At least one per class
 - ii. **Means of Verification:** Student satisfaction survey, teachers report on course delivery
 2. Number of students effectively progressing the course

- i. **Target:** 70% of students
 - ii. **Means of Verification:** List of graduating students
3. Number of students feeling confident and understanding the course content
 - i. **Target:** 70% of students
 - ii. **Means of Verification:** Student satisfaction survey

2.2.2 Student Assessment

Processes and Procedures

Student Assessment mainly refers to the existence and clear communication to relevant stakeholders of policies and mechanisms that guide the assessment activities of online learning. Students tend to present low engagement and motivation to participate in the e-learning processes, if their performance is not adequately assessed. At the same time, the assessment activities affect the way that students approach their learning. In general, student assessment should promote in-depth knowledge of the course in question, critical thinking and creativity. Therefore, the evaluation of this Aspect is crucial for the achievement of a high-quality online learning experience.

First of all, the assessment process should be tailored to the nature of each course. An e-learning experience for a student of hospitality is completely different than the one of a learner of ICT. Therefore, the assessment process should address this diversity and be tailored-made to the specific topics covered. This will ensure that the assessment is seamlessly integrated in the e-learning experience.

Among the facets of student assessment, the existence of clear guidelines, structure and nature of the assessment and the provision of grading rubrics to students, are features that should be considered. Similarly, since e-learning takes place in an online environment, the student assessment needs to take advantage of learning technologies. In order to cover the multidimensional character of e-learning, interactive features that stimulate personal interaction should be incorporated in the course assessment methods.

As the means of delivering an e-learning experience is different than the one of conventional teaching, certain technical challenges might be presented during the assessment. The Aspect of student assessment should, thus, address problems regarding the security and authentication of the learner in the online platform during the assessment. This feature further boosts the integrity of the course as a whole, since it is ensured that the student who attended the course is the one taking the assessment to receive the certification.

In addition, taking into consideration the dynamic channels of learning and communication that are formed in e-courses, the assessment activities need to be evaluated based on their ability to assess both the skills and competences gained, as well as the dynamic group interactions. This is linked with motivating students to stay active in the e-learning process. E-learning should ensure the encouragement of the students to be active in the creation of learning processes. This should be reflected in the student activities, in order for the e-learning programme to be of high-quality.

In order to ensure the integrity of the assessment, which contributes to the quality of the overall course, the student assessment needs to be performed by more than one examiner. The first one is usually the teacher responsible for delivering the online course (in case of synchronous online learning) or the responsible educational counselor (in case of asynchronous e-learning), while the second one is a teacher/ trainer experience in the educational field of the course.

Similarly to face-to-face courses, assessments need to be linked with the learning outcomes that have been selected for the course. Each assessment activity needs to clearly evaluate the ability, knowledge or understanding of the student on the topics covered during the e-learning. This assessment is also to be consistent to all learners, further boosting the integrity and reliability of the course (assessment).

As the online learning environment is a dynamic one, this needs to be also reflected on the extend of adjustment of the assessment activities. The students need to be able to provide feedback through a formally structured mechanism, with insights on how to further improve the learning experience, resulting in the high quality of the e-learning. This mechanism should also address cases of appeals in cases of perceived unfair evaluation of a student.

Finally, the issue of plagiarism is crucial to be addressed. The integrity of the e-learning process as well as certification is depended on the trust that all students who successfully complete the assessment hold the necessary credentials, outlined in the course. Therefore, the assessment of the online course should be linked with a plagiarism tool.

Summing up the processes and procedures covered above, the Aspect of Student Assessment is to evaluate the following issues:

- Implementation of a tailored examination process for each course
- Publication of the method, guidelines and criteria of assessment in advance (i.e., grading rubrics)
- Assessment of gained skills, competences and engagement in dynamic group interactions
- Assessment of students by more than one examiner
- Assessment of the extent of achievement of the learning outcomes
- Ensuring of consistent assessment to all learners
- Establishment of a formal structure for the receiving of student feedback and appeals
- Exploitation of digital technologies
- Effective mitigation of problems of security and authentication
- Provisions to tackle plagiarism

Actors:

VET Teachers/ Trainers: These are the main actors that are involved in the quality assurance of this Aspect. Since it is them that they develop the actual assessment activities, they need to be aware of the features that will improve the quality of the overall e-learning experience. At the same time, the have access to most of the data required to evaluate the Aspect (i.e., student feedback, structure of activities and content of learning outcomes).

Academic counselors: Apart from the Teachers, academic counselors can be involved in the assessment of the students. Re-assessing the performance of the learners after the first round of assessment conducted by the teachers, boosts the integrity of the course. In addition, they are also involved in the gathering of feedback, and even the development of a feedback/ appeal collection structure within the institution. This is because of their direct interaction with the students.

IT Personnel: The last Actor involved is the one of the IT Personnel. They are responsible for all the technical aspects of the student assessment, such as the development of the user infrastructure for the feedback/ appeals structure, the embedding of digital technologies in the assessment process, and the addressing of issues regarding the authentication of students during their exams.

Monitoring System:

The Monitoring System should include Key Performance Indicators to measure the level of:

- A. Awareness about the structure of the assessment
 1. Early publication of exam guidelines, format of examination, criteria of assessment in the form of grading rubric, method of assessment
 - i. **Target:** Available during the 1/3 of the course duration
 - ii. **Means of Verification:** Posting date of document on the platform
 2. Rate of awareness of the structure of assessment by the students
 - i. **Target:** 70% students aware of the structure
 - ii. **Means of verification:** Satisfaction survey
- B. Assessment of the gained skills
 1. Number of Learning Outcomes assessed during the exam
 - i. **Target:** 100% of the learning outcomes assessed
 - ii. **Means of Verification:** Linking of the Learning Outcomes to the assessment questions at the beginning of the assessment document
 2. Success rate of students given the assessment of the acquired skills
 - i. **Target:** 60% success rate
 - ii. **Means of Verification:** Percentage of students acquiring a passing grade
 3. Number of the key competences and skills of the course assessed
 - i. **Target:** 80% of the key competences and skills of the course assessed
 - ii. **Means of Verification:** Content of questions included in the assessment
 4. Number of dynamic group interaction criteria included in the grading rubric
 - i. **Target:** At least 2 dynamic group interaction criteria included
 - ii. **Means of Verification:** Content of the grading rubric
- C. Effectiveness of assessment structure
 1. Number of examiners
 - i. **Target:** 2 examiners per assessment

- ii. **Means of Verification:** Names of examiners reported in the grading rubric and assessment procedure
 2. Rate of students seamlessly attending the assessment
 - i. **Target:** 90% of students
 - ii. **Means of Verification:** Evaluation forms completed by students after the assessment, regarding the assessment process
 3. Number of provisions addressing the different assessment needs of students
 - i. **Target:** At least 2
 - ii. **Means of Verification:** Provisions being mentioned on the course information document
 4. Existence of audiovisual supporting infrastructure for students with functional impairment
 - i. **Target:** 1 audiovisual supporting infrastructure
 - ii. **Means of Verification:** Audiovisual supporting infrastructure
 5. Number of periodic assessments
 - i. **Target:** At least 2 periodic assessments
 - ii. **Means of Verification:** Assessment questions and student list participating in the assessment
 6. Existence of appeal and complaints form for the assessment process
 - i. **Target:** 1 appeals and complaints form
 - ii. **Means of Verification:** Appeal and complaints form
 7. Number of formal technical infrastructures for the storing (i.e., server, cloud), managing and addressing student feedback and appeals
 - i. **Target:** 1 technical storing infrastructure
 - ii. **Means of Verification:** Technical storing infrastructure
- D. Effective exploitation of digital technologies and mitigation of security and authentication processes
 1. Number of plagiarism-software exploited
 - i. **Target:** At least 1
 - ii. **Means of Verification:** Plagiarism-tested student assessment forms
 2. Number of digital tools and e-solutions embedded in the assessment process
 - i. **Target:** At least 3
 - ii. **Means of Verification:** Description of the tools in the course information sheet and feedback of students received on the tools (via the course evaluation forms)
 3. Use of official documents for the authentication of students attending the assessment
 - i. **Target:** 1 official document per student

- ii. **Means of Verification:** Reference of the obligations of students to have a valid authentication document in the course information sheet
 4. Implementation of random checks and verification of the identity of students
 - i. **Target:** At 5% of students random checked
 - ii. **Means of Verification:** List of participating students that were random checked

2.2.3 Support and Information

Processes and Procedures

Support and information in VET is an essential procedure that facilitates the student's educational experience. In that sense, the collaboration between students and the administrative staff will produce results of a higher quality. In that sense the support and information aspect is important in order for the learners to be able to interact with teachers and their colleagues in an online VET environment.

More specifically in order to achieve a higher quality learning experience, an interaction between students and the Institutions must be enhanced. Since the course is delivered in an online environment, certain students might not be able to adjust to this new mean of teaching. Therefore, learners should receive either a short training or guidelines on how to properly use and take advantage of the online learning material and resources. In addition, a support from a tutor would also aid towards their integration to the academic environment.

At the same time a mechanism that would pinpoint learners to the respective personal, technical or educational support, depending on the facing issue, should be in place. This mechanism can be either in the form of an independent platform, or embedded in the educational platform of the course.

In general terms, the VET students would need guidance concerning their involvement in online learning in a VET environment. In that sense, the students must be provided with Career Guidance and support throughout their studies. This will also be boosted through program handbooks which will provide the students with all the useful information needed. Also by the handbook the students will be supported in various aspects of their academic life situation which will facilitate their studies.

Teachers are also crucial actors that can support students depending on the individual needs that they might have. This is the reason why the latter need to be able to seamlessly reach out to the trainer or teacher, either directly or digitally. In order for this to be achieved, a structured channel of communication should be in place, ideally embedded in the educational platform. The communication structure can take the form of a forum or a contact list where students can find the contact information of their teachers.

Similarly, students need to also be aware of who to contact in case they have a technical or administrative issue, and adequately trained staff should be in place to help them. The support offered on an institution-level basis should also be immediate and adequate.

Even though the course might be offered in an online environment, the learners still need access to educational resources and libraries, so as for them to achieve the course learning outcomes.

In general, all support resources should be accessible by all students, while support should be provided according to each student's specific needs and profile

In a summary, the following topics are addressed by the Aspect of Support and Information:

- Enhanced interaction among VET institutions and students
- Existence of support mechanisms such as induction programmes and support tutors
- Existence of adequate budget for the supporting mechanism
- Guidance of students in the online VET environment, via career guidance structures and programme handbooks
- Easy communication with teachers and technical/ administrative support staff
- Student access to libraries
- Accessibility of the support mechanism

Actors

Teachers and trainers: are responsible for supporting students on a daily basis, as they have direct contact with them during the courses. At the same time, due to their interaction with the learners they are able to identify their individual needs and offer tailor support and guidance.

Administrative Staff: is responsible for the implementation of all the actions that regard the effective and clear provision of information to the students. All issues that are respective to the admission and progression of students (except for education-related topics) fall under their scope of work.

Technical Staff: are responsible for problem solving on all technical-related issues. The support they offer is crucial for enabling students to successfully attend the course without any technical difficulties.

Tutors and counselors: are the contact points of students for all issues that regard their academic progression. They can offer support on all academic issues that take place outside the digital classroom.

Monitoring System

The Monitoring System should include Key Performance Indicators to measure the level of:

- A. Enhanced interaction between VET institutions and students
 1. Number of induction programmes and training guidelines for the use of the digital educational platforms
 - i. **Target:** 1 training guideline document or 1 induction training programme
 - ii. **Means of Verification:** Training guideline document or induction programme
 2. Number of support mechanism available
 - i. **Target:** 1 support mechanism
 - ii. **Means of Verification:** Support mechanism section in the educational platform
 3. Availability of budget resources for the support of students

- i. **Target:** 2% of institutional budget
 - ii. **Means of Verification:** Financial report of the institution
- B. Guidance of students in the online VET learning environment
 1. Number of programme handbooks available
 - i. **Target:** 1 programme handbook
 - ii. **Means of Verification:** Programme handbook
 2. Number of channels of communication with teachers available
 - i. **Target:** At least one channel available (forum, emails, video calls)
 - ii. **Means of Verification:** Communication channel embedded in the educational platform
 3. Number of channels of communication with technical and administrative staff
 - i. **Target:** At least one channel available (forum, emails, video calls)
 - ii. **Means of Verification:** Communication channel embedded in the educational platform
 4. Response time of staff to student inquiries
 - i. **Target:** Within three working days
 - ii. **Means of Verification:** Student satisfaction survey
- C. Student access to libraries
 1. Number of students aware of the resource libraries
 - i. **Target:** 90% of students
 - ii. **Means of Verification:** Student satisfaction survey
 2. Number of students using of the resource libraries
 - i. **Target:** 60% of students
 - ii. **Means of Verification:** Online library users log details
- D. Accessibility of the support mechanism
 1. Number of accessibility features embedded in the platform (i.e., alt text, audio text)
 - i. **Target:** At least one
 - ii. **Means of Verification:** Accessibility features embedded in the platform

2.3. Context

2.3.1. Training Material Content

Processes and Procedures:

Training material is digital or printed content required for students or employees' training purposes, presented in the form of workbooks, exercises, courses, programs, videos, assessments or exams. The quality of the training material depicts the overall quality of the course itself. This is why the creators of the material (teachers, publishers, specialized developers) need to pay major attention to the quality of the e-learning content.

In that sense, the contents of training material must be properly developed in order to deliver the best possible results. In order to ensure this, the objectives of the material have to be established at an early stage. More specifically, the first activity that needs to be done is the creation of the course plan. That action will provide the basic structure of the material and it will also provide the objectives/goals of the course. By defining the outcomes, the knowledge and the skills linked to the course, its main outline will be identified. This will allow learners to understand the course objectives and then achieve them in a smoother and more efficient way. Moreover, the identification of the outcomes is also useful for the review of the curriculum and its efficiency.

As this step is done, the next action that needs to be accomplished is the set-up of the team. More specifically, all team members should be engaged in the implementation of their respective tasks related to the preparation of the material from the very beginning. That means that teachers should be involved in order to deal with the curricula. In addition, publishers will need to promote the action in general. Finally, a specialized course developer is crucial in order to develop the platform in which the courses are going to take place. All the above actors need to cooperate effectively so as to achieve the best possible quality of the training material.

Additionally, it is important to be able to utilize all the available content that already exists. For instance, there is no reason to proceed with the development of new content, in case there are pre-existing materials. In this case, it is easier and more efficient to develop the new material based on already available templates, which will allow to produce high-quality material in a shorter period of time. It is also very important to analyse the possible feedback that older versions had already received and insert the observations in the new/improved version.

Moreover, there is the need to create practical information about the material. More specifically, the material should be linked with a certain timeline. This should be done in order for the learners to be able to follow a certain training method and for the teachers to create their training agenda accordingly. In that sense, the training format for the curriculum should be chosen according to the type of the course. In e-learning environments, learners and teachers are going to use platforms or learning management systems in order to follow the curricula. Blended learning methods (combination of synchronous and asynchronous education models) can also be envisaged in the course planning and their peculiarities have to be considered in the creation of the training material.

In order for the general framework of the training material to be completed, there is the need to create segments and design the outline of the content. The segments will be separated according to the different skills that the training will promote. As far as the configuration of the content is concerned, it has to be divided in three parts: a) background and information, b) courses planning forms, c) complete course content. Once those activities are done, the creation of the draft should be provided in order for the material to be finalized. Following this method and for the material to achieve the best possible quality and results, it needs to be prepared by following EQF and NQF levels.

Summing up the processes and procedures covered above, the preparation of the Training Material Content is to consider the following issues:

- Creation of the course plan and identification of the objectives/goals of the course
- Set-up of the team (teachers, publishers, developers etc.)
- Take advantage of the existing material and content in order to develop the new training material
- Create the timeline of the training material and the course
- Select a proper format, depending on the type of the course (e-learning, blended)
- The outline of the content has to be divided in three parts: a) background and information, b) courses planning forms, c) complete course content.
- It is important to follow EQF and NQF levels.

Actors:

Teachers: will need to be part of these procedures in order to ensure that the requirements for the materials are satisfied. Also, the teachers will need to understand every part of the material and be able to address the content to students in the best and more effective way.

Publishers: will need to proceed to verify that the training material is in line with the course assessments and the objectives.

Specialized course developers: experienced in the corporation of LMS, SCORM authoring eLearning tools, or any other tools employed to deliver training, handles the technical specifications and ensures error-free training delivery.

Monitoring System:

The Monitoring System should include Key Performance Indicators to measure the level of:

- A. Quality of training development standards
 1. Existence of a course plan, including details of the objectives, timeline, outcomes, knowledge and the skills linked to the online course.
 - i. **Target:** At least 1 course plan per course
 - ii. **Means of verification:** Course plan
 2. Use of the course plan for the development of the training material.
 - i. **Target:** At least 1 course plan per module
 - ii. **Means of verification:** Course plan
 3. Involvement of a specialized course development committee (incl. at least teachers, publishers, course developers) in the elaboration of the training material.

- i. **Target:** At least 3 participants teachers, publishers, course developers
 - ii. **Means of verification:** Report of their findings and proposals, list of staff involved
4. Number of industry representatives involved in the development of training material.
 - i. **Target:** At least 1 representative for each industry
 - ii. **Means of verification:** Completed feedback form on the training material
5. Training material is prepared using EQF and NQF levels as a reference.
 - i. **Target:** At least number 3 EQF level and 4 NQF level
 - ii. **Means of verification:** Certification of provider, course information guide (where the EQF level is mentioned)
6. Satisfaction rate of students on the e-learning format selected (e-learning, blended)
 - i. **Target:** 70% of the students satisfied
 - ii. **Means of verification:** Satisfaction questionnaires and surveys
- B. Preparedness for transferring from face-to-face to e-learning environment the specific VET content
 1. Percentage of the curricula which can be transferred directly to e-learning environment
 - i. **Target:** At least 50%
 - ii. **Means of verification:** National regulations and internal curricula regulatory documents/measures.
 2. Percentage of the curricula that can be further adapted with minor efforts
 - i. **Target:** At least 50%
 - ii. **Means of verification:** National regulations and internal curricula regulatory documents/measures.
 3. Percentage of the curricula which cannot be transferred effectively in an online environment.
 - i. **Target:** max. 15%
 - ii. **Means of verification:** National regulations and internal curricula regulatory documents/measures.
- C. Policy and guidelines for copyright issues and plagiarism
 1. Existence of an internal policy or guideline to regulate copyright issues and plagiarism in training material.
 - i. **Target:** 1 policy/ guideline included in the institutional policy report for developing training material
 - ii. **Means of verification:** Institutional policy report

2. Number and use of software/tools to detect copyright issues and plagiarism in e-learning training material.
 - i. **Target:** At least 1 Digital tool
 - ii. **Means of verification:** Encryption of data, tracking of the data usage by the students, plagiarism tool in place
- D. Training evaluation and improvement methodology
 1. Number of individuals involved in a specialized committee for the monitoring of the training evaluation and improvement.
 - i. **Target:** At least three teachers who will provide the guidelines
 - ii. **Means of verification:** Creation of monitoring systems and Improvement systems, list of involved staff
 2. Existence of clear guidelines about the Training evaluation and improvement methodology are developed and communicated to the students.
 - i. **Target:** At least one Handbook with guidelines
 - ii. **Means of verification:** A handbook with guidelines
 3. Existence of a dedicated internal process to address students' evaluations and complaints.
 - i. **Target:** At least 70% of the students aware about the process
 - ii. **Means of verification:** Questionnaires and surveys, list of complaints received through the process
 4. Number of external experts involved in the continuous and final reviewing process of the training material.
 - i. **Target:** At least 3 experts from the VET sector
 - ii. **Means of verification:** Reports of the experts after the review of the content

2.3.2. Structure of the Online Learning Environment

Processes and Procedures:

Online learning environments are primarily - but not necessarily – asynchronous, as users do not have to log on to the computer at exactly the same time as their instructor or classmates in order to attend class. Students will have, however, specific deadlines to meet for their assignments and learning activities. Having a dedicated “studying environment” has been shown to be significantly associated with academic performance, satisfaction, and course completion among learners, which is why a good learning environment is a great attribute to the success of an online course. It is not only about creating a positive atmosphere for students to feel engaged and motivated. An ideal course setting should encourage the instructor-learner connection and inspire a sense of support and communication. This is why the actors involved in the set-up of the online learning environment

(specialized developers, teachers, content creators) need to pay major attention to the quality of this aspect.

Despite the fact that it is more accurate and easier to create learning environments for asynchronous training courses, there are efficient ways to structure them for synchronous situations as well.

First of all, there is the need to proceed with the creation of the structure, which basically consists of two components: the curriculum and the lessons. As far as it concerns the curriculum, it allows the learner to be able to follow the logical line of the course. It also assists the learner in understanding the learning procedure and developing the skills needed in order to apply the acquired knowledge. On the other side, the lesson structure implies a continuous interaction between the learners and the teachers. In that sense, once the interaction - even if it is online - creates the challenges appropriately around the training, the quality of the learning environment skyrockets.

A majorly important aspect of the creation of an online learning environment is the technological one. Firstly, ensuring that the internet connection is good and fast is essential. In addition, it is important also to include user-friendly educational tools in the course. The next step that needs to be followed in order to achieve a functional technological environment for the course is to back-up the work done and also provide a recording of the training sessions, in order for them to be accessible to students after the end of the lecture. By following those steps, the general framework of the course is improved and the pathway for a better understanding around the subject is created.

Finally, it is crucial for the learning environment to be considered as a core element in the creation of the training content. More specifically, the work around the development of the training material needs to be focused and targeted to the specific field of interest. Moreover, there needs to be consistency in storing/archiving the training resources, which is important for the improvement of the online environment. In addition, the content must be created according to the level/age of the learners, so for them to be able to analyse and understand it more easily. The repository of resources should be carefully organised, making it simple for the user to search anything they might need for the course. In general, the technological aspect of the learning material majorly defines the quality of the learning environment.

Summing up the processes and procedures covered above, the preparation of the structure if the Online Learning Environment is to evaluate the following issues:

- Creation of the structure (curriculum and lesson) of the environment
- Technological aspect of the environment, such as internet connection and user-friendly educational tools in general
- Adaptation of the environment to the field of interest of the course
- Consistency and accessibility in storing resources (repository)

Actors:

Specialized developers: create the online environment with the collaboration of the teachers. It is important to include all the technological tools in order for the environment to be user-friendly and for the learners to achieve the best possible results following the course.

Teachers: play an important role in maintaining an efficient structure for the learning environment, correctly storing training materials and resources. Since they are also responsible for the development the actual assessment activities, they need to be aware of the features that will improve the quality of the evaluation and the overall e-learning experience.

Content creators: create the training material adaptable to the needs of the courses. It is essential for the creation of a more learner-friendly environment which will lead to an increase of the general quality of the course.

Monitoring System:

The Monitoring System should include Key Performance Indicators to measure the level of:

- A. Online training system quality standards
 1. Percentage of the institutional budget foreseen by the institution concerning the development and maintenance of the learning environment.
 - i. **Target:** At least 2% of the institutional budget
 - ii. **Means of verification:** Institutional financial report
 2. Number of licenses and subscriptions to the learning environment offered by the institutions to its students.
 - i. **Target:** At least 2 per student
 - ii. **Means of verification:** Payment of subscriptions, course information guide
 3. Satisfaction rate of learners regarding the learning environment that is selected and developed.
 - i. **Target:** At least 70% of the students satisfied
 - ii. **Means of verification:** Student satisfaction survey
 4. Number of resources and tools to assist student learning.
 - i. **Target:** At least 1 tool
 - ii. **Means of verification:** Course information guide, tool embedded into the platform
- B. Reliable and robust technical infrastructure
 1. Number of system updates per year of the e-learning environment.
 - i. **Target:** At least 2 per year
 - ii. **Means of verification:** Improvements to the technical aspects of the platform, technical update report
 2. Percentage of students able to successfully log into the course per lesson

- i. **Target:** At least 95% of the students
 - ii. **Means of verification:** Students satisfaction survey, login data from the platform
 3. Frequency of backing-up the work of students.
 - i. **Target:** Daily back-ups
 - ii. **Means of verification:** Platform reports on back-ups
- C. User Experience standards
 1. Number of students motivated to be engaged in the course.
 - i. **Target:** At least 70% of the students
 - ii. **Means of verification:** Students satisfaction survey
 2. Number of students having received guidelines/training in using the e-learning environment.
 - i. **Target:** At least 95% of the students
 - ii. **Means of verification:** Students satisfaction survey, course information guide
 3. Number of students understanding the learning procedure and the skills needed in order to apply the acquired knowledge.
 - i. **Target:** At least 70% of the students
 - ii. **Means of verification:** Group discussions with teachers during the first week of classes
 4. Number of students with special educational needs able to access the e-learning environment.
 - i. **Target:** At least 95% of the students
 - ii. **Means of verification:** Students satisfaction survey, login data from the platform
- D. Efficiency standards
 1. Satisfaction rate of students on the easy access of training materials and resources
 - i. **Target:** 70% satisfaction rate
 - ii. **Means of verification:** Students satisfaction survey
 2. Number of features that foster effective communication, cooperation and interactivity between learners and teachers
 - i. **Target:** At least 1 feature
 - ii. **Means of verification:** Feature embedded in the online educational platform
 3. Satisfaction rate of learners and teachers on their between communication.
 - i. **Target:** 70% satisfaction rate
 - ii. **Means of verification:** Students satisfaction survey

4. Satisfaction of learners on the applicability of the platform according to their needs (age and learning field)
 - i. **Target:** 70% satisfaction rate
 - ii. **Means of verification:** Students satisfaction survey

E. Internal evaluation, updating and improvement of the online learning environment

1. Number of internal and external evaluation mechanisms for the online learning environment.
 - i. **Target:** At least one internal and one external evaluation mechanism
 - ii. **Means of verification:** Reports, findings and provision of feedback concerning the learning environment and questionnaires and surveys from the students.

2.3.3. Interactivity of the Platform and Cooperation

Processes and Procedures:

The learning platform shall provide a permanent connection between students and trainers on the one hand, and among the students themselves on the other, if synchronous communication is impossible, asynchronous communication shall be available in every moment (24/7). In order to keep learners interested in learning, the platform should have different ways of presenting the learning material, such as: interactive visualization forms, multimedia, interactive problem-solving tasks, aimed to reinforce knowledge and to help the students keep up with the training. New and interesting methods -for example in the form of games or online activities (both individual and group online tasks, online games) can also be provided. This will allow to check the students' progress with the mastering of the learning material, in order to be able to move on to the next stage of learning.

The platform shall provide tools for continuous synchronous and asynchronous communication, such as the publication of both general and group- and student-specific news, forums, chat, and the ability to announce events. The communication tools must be intuitive and accessible even for teachers and students without a high level of proficiency in the field of ICT, as communication must be carried out easily and quickly without requiring large resources in terms of connection and devices.

Communication shall be facilitated in order to be accessible for students from different social groups, from different cultures, as well as for students with different initial levels of knowledge. In addition, through different activities, it should be possible to test the mastering of the learning material at certain predetermined intervals and/or milestones, to ensure the opportunity for different speeds of progress at times convenient for the student. Students could be able to see their progress in the platform and compare with other students, as well as with average performances. Learners who stay behind can be supported, for example, through specialized means by both the teachers and the leading learners.

The main topics that this Aspect covers are the following:

- Development of permanent connections among the target groups of teachers and learners.

- Interactive presentation of training material
- Synchronous and asynchronous communication and accessibility
- Assessment of student performance

Actors:

Specialized developers: Need to be involved in order to develop a specialized platform or to fine tune an existing one to serve to specialized tasks.

Teachers: provide the learning material to the content creators in order to deliver it in an attractive, convenient and accessible for the learners form.

Content creators: Support in the production of interactive visualization forms, multimedia, interactive problem-solving tasks.

Students: Have to be monitored to assess if they are interested in the platform and if they take active part in the communication. It shall also be monitored if they are capable to access both the learning material and the communication tools easily.

Monitoring System:

The Monitoring System should include Key Performance Indicators to measure the level of:

A. Accessibility of the learning platform

1. Rate of students that have successfully completed the online course compared to the number of those who have started it.
 - i. **Target:** 50% completion success rate
 - ii. **Means of verification:** Course completion data from the institution
2. Satisfaction rate of users with special needs on the accessibility of the learning platform.
 - i. **Target:** 90% satisfaction of the students with disabilities involved
 - ii. **Means of verification:** Student satisfaction survey
3. Number of individuals part of a technical support team to provide guidance on the technology used and ensure the accessibility of the learning platform.
 - i. **Target:** 1 technical staff designated to provide guidance
 - ii. **Means of verification:** Designation of duty in the job description
4. Ability of students to easily access the contact information of the technical support team.
 - i. **Target:** All teachers' and staff's email address and/or phone number of teacher/staff provided
 - ii. **Means of verification:** Information available in the course information guide
5. Ability of teachers to navigate the platform.
 - i. **Target:** 90% of teachers effectively navigating the platform
 - ii. **Means of verification:** Student satisfaction survey on teacher's performance

B. Communication and interactivity variety

1. Number of different communication channels exist in the platform (e.g. voice communication, instant messaging, group chats, e-mailing, forums, etc.)
 - i. **Target:** 3 communication channels
 - ii. **Means of verification:** Channels included in the online platform

C. Compliance with the rules of GDPR

1. Existence of a specific policy to regulate GDPR, data protection, e-privacy, intellectual property and ethical standards' issue.
 - i. **Target:** 100% protection of data
 - ii. **Means of verification:** Encryption of data, tracking of the data usage by the students

D. Student's interest tracking

1. Existence and application of users' data collection mechanisms to track the profile of students enrolled, their specific needs and their graduation rates.
 - i. **Target:** 100% of students' data collected
 - ii. **Means of verification:** Mandatory online application form with fields about students' learning expectations and considered needed learning content
2. Existence and application of a strategy on the use and purpose of learning analytics within the institution.
 - i. **Target:** 2 weeks after the end of the course, 70% of the students covered
 - ii. **Means of verification:** Report published on the learning analytics
3. Existence and application of a feedback collection mechanism to gather qualitative inputs on the students' experience.
 - i. **Target:** 1 week after the end of the course, 90% of students covered
 - ii. **Means of verification:** Student satisfaction survey

E. Evaluation and improvement of the communication

1. Number of people involved in a designated committee to gather, elaborate and implement evaluations and suggestions on how to improve the communication channels of the learning platform.
 - i. **Target:** 3 persons
 - ii. **Means of verification:** Periodical reports and action plans for improvement

2.3.4. Flexibility

Processes and Procedures:

Flexible learning is a method of learning where students are given freedom in how, what, when, how long and where they learn. Flexible learning environments focus on how physical space is used, how students are grouped during learning and how time is used throughout teaching. Flexibility plays a significant role in the overall aim of facilitating students in the context of education. It is also important to take into consideration that flexibility in the training environment has to be built in cooperation with synchronous and asynchronous methods.

In order for flexibility to exist in the context of education and training, it is crucial to adapt to the content and technology. More specifically, the essence of flexibility is the ability for the student to have different means of learning, while the course will not lose its quality. In that sense, the cooperation between teachers, developers and students is essential for the implementation of such a method, starting from a detailed planning of the flexible learning pathway. It is therefore critical for the normal implementation of a flexible course to also have a well-managed database for all the material of course. By ensuring that, the facilitation of the management of the course will provide the expected results in terms of quality. Students will need to be able to adapt the course to their every-day schedule, and not the opposite.

Learners are indeed the epicentre of the flexibility of the course. From this perspective, learners have to be involved in all the clusters of this procedure. In order to foster flexibility in online learning methods, it is important to follow procedures that will secure the solid and smooth implementation of the activities. More specifically, there is the need to ensure the interrelation of all the key factors of the course/curriculum. It is essential also to engage the learners between them and their teachers. In that sense, the learning environment plays a significant role to the general flexibility of the course, as the environment is created in order to establish a general framework. Learners should be constantly engaged, through assessment and feedback activities, with their institution. By following those steps, learners will be capable of adjusting their schedule with the necessities of the curriculum and be able to implement flexible methods of learning, without jeopardising its quality – but instead enhancing it.

Lastly, flexible learning provides learners with the tools and capacities to plan their activities according to their interest and enthusiasm.

Summing up the processes and procedures covered above, the following issues should be considered in the set-up of a flexible learning pathway:

- Adequate structure of the learning environment
- Adaptability of the course to the every-day schedule of the learner
- Interrelation between learners and the learning environment
- Engagement of the students, through assessment and feedback activities, with their institution

- Interrelation between learners and teachers

Actors:

Students: Are the basic recipients of flexibility. The general idea is to create the framework for students to be able to adapt the course in their ever-day schedule and the learning methods that they prefer. It is essential for students to be engaged with all the actors of the course in order to be able to choose the best possible method to follow.

Teachers: Have to preserve the quality of the course by providing to students all the necessary material. In addition, they need to be in an extensive collaboration with students and specialized developers, in order to preserve the quality of the course in high standards.

Administrative staff: In collaboration with students and teachers, they are a key actor in organising the schedules and the curricula timetables. It is essential for them to be to be always engaged always with teachers and students in order to create a flexible environment around the course.

Specialized developers: Developers play a significant role in the whole procedure as the flexibility environment contains the technological aspect in order to operate. In that sense, specialized developers will create the online content and platforms to facilitate the students to take part in the courses.

Monitoring System:

The Monitoring System should include Key Performance Indicators to measure the level of:

A. Identification of students needs and demands

1. Training resources are selected based on the pedagogical needs of a diverse student population.
 - i. **Target:** At least 80% of the students satisfied with the selected pedagogical model.
 - ii. **Means of verification:** student satisfaction questionnaire.
2. Percentage of students satisfied with the flexibility of the educational features available, based on their needs.
 - i. **Target:** 80% of students satisfied with the meeting of their needs for flexible educational features
 - ii. **Means of verification:** student satisfaction questionnaire

C. Implementation of the resources

1. Resources are available in multiple languages.
 - i. **Target:** Resources are available in national language and at least one additional language.
 - ii. **Means of verification:** Language menu of the learning environment.

2. Resources are available and accessible from different devices, so to adapt to different studying spaces.
 - i. **Target:** Resources are accessible from laptops, mobile phones and tablets.
 - ii. **Means of verification:** Testing of the accessibility of the resources on the different devices.
 3. Resources are available in different file formats
 - i. **Target:** Use of at least 2 file formats
 - ii. **Means of verification:** Files uploaded on the server of the organisation in formats such as docs, pdf, xls, ppt.
- D. Evaluation and improvement methodology
1. Flexible assessment and feedback methodologies are created based on pedagogical considerations.
 - i. **Target:** At least 2 different types of assessment and feedback collection methodologies are used.
 - ii. **Means of verification:** Identification of flexible assessment and feedback collection methodologies in the learning environment's development plan.
 2. Flexibility in terms of time and location of the e-learning experience is regulated by specific procedures that have been put in place in order to certify accessibility, student identity and the authenticity of each individual student's knowledge contribution.
 - i. **Target:** E-learning can be carried out at different times (synchronous/asynchronous) and places.
 - ii. **Means of verification:** The e-learning platform allows synchronous and asynchronous learning, in different places.

2.3.5. Resource Allocation

Processes and Procedures:

The allocation of financial resources in an e-learning environment naturally differs from the one traditionally foreseen with an in-person training delivery. Because of that, resources will have to be re-distributed in order to meet the needs that come with online training - the first one being the funding of technical infrastructures, which will have to be attractive while ensuring a fruitful learning experience.

Furthermore, resources must be employed to equip teachers, staff and students with the required skills to work with technical tools and ICT, and to maintain these skills constantly in line with rapidly developing new technologies. It is indeed essential to ensure flexibility and a rapid reaction from the trainers in teaching to and testing students. In the workload of the teachers, not only the teaching but

the communication with the students must be considered, as well the way and terms for establishing connection (physical and psychological) with the learners during the e-learning experience.

The ease of use of the learning materials for all target groups should be ensured as well. In addition, the resources must be available 24/7, with sufficient capacity to uptake the load at peak hours and with a high degree of protection against failure and attacks. It is reasonable as well that a management of devices and apps used by the students is provided through specialized technical staff of the organization in order to simplify and unify the teaching process. These are all voices of cost in terms of both human and economic resources which need to be taken into account particularly carefully when reallocating resources.

Training resources must be continuously in line with new technologies, which is also to be considered in the allocation of financial funds.

Actors:

Administration: ensures an appropriate allocation of financial resources to create the premises and conditions to build and maintain the learning environment, monitor the technical qualification of the teachers, and carry out marketing activities.

Teachers and staff: their technical up- and re-skilling must be accounted for and monitored, in order for them to be able to prepare learning content that is effective in e-learning environments and to work with ICT tools.

Technical Staff: involved in the planning and implementation of adequate marketing activities of the online training courses.

Monitoring System:

- A. Relevant allocation of the resources in the technical infrastructure
 1. Percentage of the overall financial resources of the institution dedicated to building the technical infrastructure of the e-learning environment.
 - i. **Target:** 1% of the overall financial resources
 - ii. **Means of verification:** Financial report of the institution
 2. Percentage of the overall financial resources of the institution dedicated to the upkeep of the technical infrastructure of the e-learning environment.
 - i. **Target:** 1% of the overall financial resources
 - ii. **Means of verification:** Financial report of the institution
- B. Identifying and standardizing the workload hours and working time of teachers and staff
 1. Existence of internal policies regulating the workload hours and working time of teachers and staff.
 - i. **Target:** 1 International Policy document
 - ii. **Means of verification:** Internal policy document

2. Internal policies regulating the workload hours and working time of teachers and staff are publicly made available and regularly applied.
 - i. **Target:** 1 internal policy document
 - ii. **Means of verification:** Internal policy document, staff satisfaction survey
- C. Monitoring proficiency level of teachers and other staff
 1. Number of up- and re-skilling courses designed for teachers and staff to be able to prepare learning content that is effective in e-learning environments and to work with ICT tools.
 - i. **Target:** 1 course on an annual basis
 - ii. **Means of verification:** Certificate of teachers
 2. Number of training hours delivered for the technical and ICT up- and re-skilling of teachers and staff.
 - i. **Target:** At least 15 hours
 - ii. **Means of verification:** Certificate of attendance, including hours attended
 3. Existence and implementation of assessment activities on the proficiency level of teachers and other staff prior to their up- and re-skilling training.
 - i. **Target:** 80% pass rate
 - ii. **Means of verification:** Internal online preliminary test
 4. Existence and implementation of assessment activities on the proficiency level of teachers and other staff following their up- and re-skilling training.
 - i. **Target:** 80% pass rate
 - ii. **Means of verification:** Internal online final test
- D. Monitoring and improvements regarding the fast development of the technologies
 1. Regular delivery of strategic analyses and research on the last available technologies to be used in online training pathways.
 - i. **Target:** Report on the latest available technologies, during the first month of the year
 - ii. **Means of verification:** Report on the latest available technologies
 2. Pace of the improvement of the technologies used in online training pathways, following the strategic analyses and research.
 - i. **Target:** 1 new technology adopted
 - ii. **Means of verification:** Inclusion of the technology in the platform/ updated course information guide

2.3.6. Institutional Vision

Processes and Procedures:

When defining its institutional vision, an e-training provider should firstly make sure that research and development activities for the continuous improvement of the offered e-learning services are included. Coherently, a specific institutional policy for training and upskilling of teachers and should be developed.

Moreover, organisations must carefully consider their e-learning offer when planning their presence on the market of educational services and present themselves accordingly. Marketing should be targeted to advertising on the internet by using new media and new ways as, for example, social networks, newsletters, e-mail lists, extra e-learning offers for bundles of training, etc.

Past good experience and practices of their staff members should also be highlighted and exploited, together with good feedback coming from previously trained students.

It is furthermore profitable for organisations to join national and transnational alliances and networks focusing on education and training. Sharing of good practices within various events is very useful for the transfer of knowledge and strategic approaches, and leading to an increase in the motivation of all involved in the e-learning.

The organisation, with a regulated internal system, must provide the necessary and relevant quality assurance of all services related to the education of the students and all activities related to it.

The following topics are covered by this Aspect:

- Continuous improvement of the offered e-learning services
- Institutional policy for training and up-skilling teachers
- Targeted marketing
- Participation in national and transnational network of education and training
- Quality assurance activities

Actors:

Leading Staff: ensures the definition of whole policy and strategy of the organization regarding the e-learning, and the development and the research to bring it on the right level and to preserve it.

Administration: provides the conditions for the realization of the planned activities on the market and to make the right connections between organizations in the same market area.

Developers and Researchers: analyse the rapid changes on the market and the constant need to bring all elements of the learning process up-to-date in order to ensure a good present and future positioning in the market.

Teachers: are the connecting element between learners, training resources and the actual implementation of the institutional vision.

Monitoring System:

The Monitoring System should include Key Performance Indicators to measure the level of:

- A. Relevant organisation rules and standards regarding e-learning

1. Inclusion of standards and regulations on e-learning in the organisation's strategic business plan and vision with detailed priorities.
 - i. **Target:** At least 2 standards and regulations included
 - ii. **Means of verification:** Institutional business plan
 2. Number of short-medium term KPIs included in the plan.
 - i. **Target:** At least 3 KPIs
 - ii. **Means of verification:** Institutional business plan
 3. Number of long term KPIs included in the plan.
 - i. **Target:** At least 3 KPIs
 - ii. **Means of verification:** Institutional business plan
 4. Effectiveness of the marketing strategy in relation to e-learning.
 - i. **Target:** 10% of the new prospective students engaged through the marketing strategy
 - ii. **Means of verification:** Statistical data of the institution
- B. Development plans
1. Specific standards and regulations concerning e-learning are included in the organisation's research and development analyses and plans and vision with detailed priorities, KPIs and expected results in the short, medium and long term.
 - i. **Target:** At least 2 standards and regulations included
 - ii. **Means of verification:** Institutional business plan
- C. Participation in VET networks and alliances
1. Number of VET networks and alliances in which the organisation participates as a member/associate.
 - i. **Target:** Participation in at least 1 Network
 - ii. **Means of verification:** Participation agreement/ Mandate of Cooperation/ Bilateral Agreement
 2. Participation in VET events
 - i. **Target:** Participation in at least 1 event per year
 - ii. **Means of verification:** Agenda of the event, photos
- D. Relevant qualification of the VET teachers and VET staff
1. Number of up- and re-skilling courses designed for teachers and staff following the priorities set by the organisation's institutional vision.
 - i. **Target:** 1 course per year
 - ii. **Means of verification:** Certificates of participants

2. Number of training hours delivered for the technical and ICT up- and re-skilling of teachers and staff following the priorities set by the organisation's institutional vision.
 - i. **Target:** At least 5 hours per year
 - ii. **Means of verification:** Certificate included the total number of hours attended
 3. Assessment of the teachers and staff's proficiency level following their up- and re-skilling training.
 - i. **Target:** 80% pass rate
 - ii. **Means of verification:** Internal online final test, list of participants along with their passing grades
- E. Marketing and advertising
1. Number of media, where marketing and advertisements are published
 - i. **Target:** At least 1 media
 - ii. **Means of verification:** Marketing/ advertisement posts published
 2. Number of publications
 - i. **Target:** At least 3 publications
 - ii. **Means of verification:** Marketing/ advertisement posts published
- F. Quality of the course
1. Number of quality assurance evaluations of the e-learning course per year
 - i. **Target:** At least 2 evaluations
 - ii. **Means of verification:** Evaluation report
 2. Frequency of revisions of the e-learning course
 - i. **Target:** At least one revision per year
 - ii. **Means of verification:** Evaluation report
- G. Preparedness for transferring from face-to-face to e-learning environment the specific VET content.
1. Level of institutional preparedness – number of resources, training equipment allocated.
 - i. **Target:** At least one online learning platform, one teacher, one detailed curriculum per course
 - ii. **Means of verification:** One online platform, one curriculum, teacher's contract
 2. Availability of an action plan in case of transferring face to face to distance learning
 - i. **Target:** 1 Action plan

- ii. **Means of verification:** Action plan and internal curricula regulatory documents/measures.

DEVELOPMENT OF QUALITY ASSURANCE MECHANISMS IN VET E-LEARNING ENVIRONMENTS (PERCEIVE)

E-TOOLS AND SOLUTIONS FOR QUALITY ASSURANCE

Intellectual Output 2 (Activity 2)

November 2022

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1. Introduction

The purpose of this document is to identify and list at least five e-tools and solutions that relate to the operation of a VET e-learning Quality Assurance Mechanism. The selected e-tools need to support VET providers and VET professionals in adapting and using the PERCEIVE Quality Assurance Framework to evaluate their online educational provision.

At the same time, these tools will enhance and improve the ability of VET staff and teachers to organize and access the necessary information to apply the framework and design and deliver the online courses. The selected e-tools and solutions are all connected with the functions and aspects of the framework.

2. Overview of Tools per Category

In this section, the selected e-tools are classified according to their structure and content in the following categories:

1. Learning Management Systems
2. Authoring
3. Quiz and Assessment
4. Video Conferencing
5. Screen Recording and Screencast
6. E-portfolio
7. Learning Analytics and Data Visualization

In the table below, the full list provided, along with the website links to facilitate the gathering of information about the e-tools and solutions.

List of e-tools		
Name of e-tool	Category	Link
Blackboard	Learning Management Systems	https://www.blackboard.com/en-eu/teaching-learning/learning-management/blackboard-learn
Canvas	Learning Management Systems	https://www.canvas.net/
Lectora	Learning Management Systems	https://www.lectoraonline.com/
Eduflow	Learning Management Systems	https://www.eduflow.com/
Moodle	Learning Management Systems	https://moodle.org/
Articulate Storyline	Authoring	https://articulate.com/360
iSpring Suite	Authoring	https://www.ispringsolutions.com
H5P	Authoring	https://h5p.org/
Sakai	Authoring	https://www.sakailms.org/

Lectora	Authoring	https://www.lectoraonline.com/
Questionmark Perception	Quiz and Assessment	https://www.questionmark.com/
GradeCam	Quiz and Assessment	https://gradecam.com/
Zoom	Video Conferencing	https://zoom.us/
Skype	Video Conferencing	https://www.skype.com/en/
Go to Meeting	Video Conferencing	https://www.goto.com/meeting
Camtasia	Screen Recording and Screencast	https://www.techsmith.com/video-editor.html
Mahara	E-Portfolio	https://mahara.org/
Google Sites	E-Portfolio	https://sites.google.com/
Google Analytics	Learning Analytics and Data Visualization	https://analytics.google.com/
Tableau	Learning Analytics and Data Visualization	https://www.tableau.com/

3. Analysis of Tools

Even though multiple e-tools have been identified, a few of them are analysed in detail about their functionalities. Nevertheless, through the links provided, VET staff and Teachers can find more information about all the e-tools and solutions.

3.1. iSpring Suite

iSpring Suite is a PowerPoint-based authoring toolkit produced by iSpring Solutions that allows users to create slide-based courses, quizzes, dialog simulations, screencasts, video lectures, and other interactive learning materials. The output courses are published in HTML5. Specific features are:

1. Presentations into online courses
2. Video lectures
3. Interactive assessments
4. Recording of screencasts and software tutorials
5. Interactive role-plays

6. eLearning interactions

This tool can be used to facilitate the adaptation of the courses from the physical to the online educational environment. In detail, there are indicators under the Aspect of the Training Material Content that assess the ability of the institution to transfer its learning content to an online environment. The iSpring Suite is a tool that not only enables this process but it also creates interactive, engaging and innovative learning material. Therefore, it increases the engagement of the students and motivates them to attend the online classes. As a result, both the attendance rates and the satisfaction of the students are increased.

iSpring Suite can also act as a tool that facilitates the student learning process, which is an indicator covered under the Aspect of the Structure of the Online Learning Environment. Due to the variety of types of training material provided, the teachers can select various means of delivering the training material content. The tool provides flexibility to the VET professional as it can be adjusted according to the different needs of each vocational subject and course taught.

3.2. Lectora

Lectora Online is a cloud-based learning management solution that provides small to large enterprises with authoring tools to design, publish and deliver courses on multiple platforms. It is a tool that can be used to create interactive e-learning content, such as quizzes, assessments, and presentations. It enables users to collaborate with team members and automatically track revised content using versioning capabilities.

This tool is applicable to multiple Aspects and Indicators of the Framework. For once, it can be combined with the previously mentioned tool, in order to design interactive and informative training material that are available online. However, this tool can also contribute to the seamless delivery of the online course. The delivery includes both the training provided to the students, but also their assessment through the quizzes provided.

At the same time, the flexibility provided by this tool ensures that the different needs of students will be addressed, as the learning provision can take multiple forms and formats, without sacrificing its quality. Therefore, the satisfaction of the students regarding the accessibility of the course will be enhanced, which is another indicator covered by the framework.

The ability of this tool to enable the learners to collaborate and track the revised content also provides a base for fostering the dynamic group interactions that are necessary in order to achieve a high quality online educational delivery. As mentioned in the framework, learners need to be engaged in the online course in order to minimize the fail and drop out rates. Through this tool, VET professionals can foster a cooperative environment, even in an online format to support the interactions between students.

3.3. H5P

H5P is a free and open-source content collaboration framework based on JavaScript. H5P is an abbreviation for HTML5 Package, and aims to make it easy for everyone to create, share and reuse interactive HTML5 content. It is an open-source tool that allows users to create interactive content, such as quizzes, games, and interactive videos.

Similar to the previous tools, H5P can contribute in the creation of interactive content for the learners. The Aspect of Student Assessment is greatly supported by this tool. For example, short quizzes can be embedded in interactive videos and lectures in order to test the student understanding during the delivery of the class.

As already mention, it is crucial for the student to remain engaged during the course. Since the teacher and the student are not placed in the same room, the first will. Need to frequently assess that the latter is actively paying attention to the course. This can be achieved by the use of this e-tool and the embedding of questions of understanding in the lecture, addressing another indicator that requires teachers to frequently monitor the student engagement. In other words, informal student assessments are a necessary part of high quality online courses and this type of activity can be monitored via using this tool.

Finally, this is another tool that enriches the educational provision, as it provides the possibility for the institution to get inspired by other educational material already developed.

3.4. GradeCam

GradeCam is an assessment tool that allows educators to quickly grade and provide feedback on student work using a computer or mobile device. It offers a variety of online grading solutions and standards-based assessment tools that teachers can access anywhere.

GradeCam is one of the most useful e-tools as it can be used to facilitate the implementation of the student assessment, which is one of the most important aspects of the framework. Apart from its use in the assessment of students, it also facilitates the provision of feedback and the interaction between the teachers and the students. Since the classes are to take place in an online environment, the direct contact between teachers and students can face multiple challenges. This tool facilitates the quick and seamless provision of feedback and the expression of inquiries by the students.

As a reminder, one of the indicators of the framework refers to the number of tools that are used to gather the students' feedback. This is one tool that serves this purpose, increasing the overall capacity of the institution to provide high quality online education.

At the same time, the tool provides the student with flexibility in the types of devices that they can use. Depending on the special needs and economic background of the learner, each learner can choose the device that they feel more comfortable using or have easier access to, for the completion of the course assessments. Therefore, all learners are included in the educational provision and no student faces any challenges in completing the course. This increases the flexibility and the inclusiveness of the course.

3.5. Eduflow

Eduflow is a tool that helps to design and deliver interactive and engaging online courses, and also track student progress and provide feedback.

Eduflow also covers two main topics that are addressed by the framework. The provision of feedback is crucial as mentioned before as students need to be able to express their problems and thoughts as quickly as possible, while the VET staff and teachers need to be prompt in addressing those feedback.

However, the student progression is another aspect that is covered by the framework and that needs to be monitored. Since Eduflow is a learning platform, it provides all the necessary data and information to monitor the student progression.

At the same time, as a learning platform is easy to be developed and made ready for use. Therefore, the time, the effort and the funds needed to adapt a course from the face-to-face to the online learning environment are reduced significantly.

Overall, this tool can increase the performance of institutions on multiple indicators and aspects, improving the ability of VET providers to receive the PERCEIVE certification.

3.6. Sakai

Sakai is a free, community source, educational software platform designed to support teaching, research and collaboration. Systems of this type are also known as Course Management Systems, Learning Management Systems, or Virtual Learning Environments. It is a collaborative learning environment that can be used to create and manage online courses, as well as to facilitate communication and collaboration among students and faculty.

As already mentioned, the communication between the students and the teachers is a crucial element that characterizes the quality of the course. At the same time, students need to be able to collaborate with each other and this the teachers in order to foster the dynamic group capabilities of the group. This is because the e-solution has robust communication options that increase the group awareness and facilitate the communication of the users. Both the synchronous and the asynchronous communication is supported, which are both addressed as indicators in the framework.

At the same time, Sakai can easily integrate other apps and tools creating synergies between the different application that the institution is using. As a result, multiple aspect sand indicators of the framework can be addressed by the combination of this tool and other solution that VET providers choose to incorporate.

4. Conclusion

In this report, a number of tools have been presented. These tools cover both the design and the delivery of online courses and they have features that are connected with the PERCEIVE Framework of Quality Assurance of VET in e-learning environments. In detail, the framework is comprised by certain indicators that can be achieved through the use and adaptation of these online tools,

improving the performance of the VET institutions in delivering high quality online education and receiving the PERCEIVE certification.

It should be mentioned that these tools are flexible and therefore can be incorporated into the practices and operations of multiple VET institutions, regardless of their geographical location, size and local, regional or national reach.

As a final note, the use of these e-tools can be also combined with the training material developed under the following Intellectual Output of the Project. In order to adequately increase the quality of the educational provision, VET providers not only need to have access to the necessary tools, but they also need to have trained staff and teachers that are aware of the importance of quality assurance in online education. For this reason, the training material of PERCEIVE is going to foster the understanding of stakeholders on the main topics of quality assurance and it is going to raise awareness about the steps that need to be followed in order to evaluate the quality of the online VET educational provision.

LEAFLET WITH LINKS FOR THE PERCEIVE QUESTIONNAIRES

Links to the Online Evaluation Forms		
Axis	Aspect of the PERCEIVE Framework	Link
Teachers and Staff	Support of Teachers and Staff	https://bit.ly/PERCEIVE_support_teachers-and-staff
Teachers and Staff	Qualifications and Prior Experience	https://bit.ly/PERCEIVE_qualifications-and-prior-experience_teachers-and-staff
Teachers and Staff	Professional Development and Upskilling	https://bit.ly/PERCEIVE_professional-development-and-upskilling_teachers-and-staff
Students	Admission and Progression	https://bit.ly/PERCEIVE_admission-and-progression_students
Students	Student Assessment	https://bit.ly/PERCEIVE_student-assessment_students
Students	Support and Information	https://bit.ly/PERCEIVE_support-and-information_students
Context	Training Material Content	https://bit.ly/PERCEIVE_training-material-content_context
Context	Structure of the Online Learning Environment	https://bit.ly/PERCEIVE_structure-online-environment_context
Context	Interactivity of the Platform and Cooperation	https://bit.ly/PERCEIVE_interactivity-of-platform-and-cooperation_context
Context	Flexibility	https://bit.ly/PERCEIVE_flexibility_context
Context	Resource Allocation	https://bit.ly/PERCEIVE_resource-allocation_context
Context	Institutional Vision	https://bit.ly/PERCEIVE_institutional-vision_context