

**Modernization and Internationalisation of Iranian HEIs via collaborative TEL-based curriculum development in engineering and STEM**

State of the Art of HEIs in Engineering and STEM studies at EU

# **ACRONYMS**

| **ARCS** | **Attention, Relevance, Confidence, and Satisfaction** |
| --- | --- |
| **CDIO** | **Conceiving, Designing, Implementing, and Operating** |
| **ECTS** | **European Credit Transfer and Accumulation System** |
| **ENQA** | **European Network for Quality Assurance** |
| **EU** | **European Union** |
| **EUA** | **European Universities Association** |
| **HE** | **Higher Education** |
| **HEI** | **Higher Education Institution** |
| **ICT** | **Information and Communications Technology** |
| **IR** | **Iran** |
| **NARIC** | **National Academic Recognition Information Centers** |
| **PC** | **Partner Countries** |
| **PD** | **Professional Development** |
| **QA** | **Quality Assurance** |
| **SES** | **Socio Economic Status** |
| **STEM** | **Science, Technology, Engineering and Mathematics** |
| **UAb** | **University of Abeiro** |
| **USGM** | **Università degli Studi Guglielmo Marconi** |
| **UTU** | **University of Turku** |
| **VLE** | **Virtual Learning Environment** |

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**ABSTRACT**

## Introduction

This report combines the institutional UNITEL reports of University of Turku (UTU), University of Abeiro (UAb) and Università degli Studi Guglielmo Marconi (USGM). It contains also the national reports of Finland, Italy and Portugal and defines the state of the art of HEIs in EU level.

The information of the original institutional and national reports is also presented (BLUE). Thus the report will give rich examples of the current practices to other workpackages (e.g. for UNITEL e-course and curriculum modernization) of UNITEL project.

## Chapter 1. Methods and materials

The information from EU partner universities was gathered with a questionnaire by UNITEL project. The respondents were not only persons working in UNITEL project but they were representing various departments and offices in partner organisations. The respondents have been involved in curriculum development, quality assurance and TEL activities for decades on an institutional and national level.

### The institutions and respondents

The institutions were the EU partners of UNITEL project:

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### The types of sources used

The partners were using a wide range of different sources and triangulation between sources was made: University internet and intranet pages, university strategies and action plans, rectors and vice-rectors statutes (e.g. for curricula development), institutional intranet pages, documents by the Ministry of education and culture (e.g. government policy plans). Also interviews with department coordinators were made. As an example USGM described the process as follows:

*The analysis was conducted in cooperation among the Research and Development Office,* the *Multimedia Didactive and Creative Production and the Development of information systems and support to didactic activities. The top management of the University, both in the administrative and didactic field, was informed about the research and facilitated the contact between the different offices. It also provided the strategic documents (below) guaranteeing a smooth implementation of the communication process and of documents collection. For the Remote laboratory section the Department if ICT Engineering has been involved especially Prof. Martini and Prof. Bocci who are actively involved in the laboratory itself. The analysis was based on all the strategic documents: University Quality Assurance System: Processes and Responsibilities; University Quality Policies; University Strategic Plan 2019-2021; Services Chart; Guidelines for Didactic Planning.*

## **Chapter 2. Existing practices for curriculum planning**

### **2.1. Policies and guidelines in use for curriculum planning**

**Planning the initiation of a course (e.g. needs analysis for demand and constraint identification etc.)**

Autonomy as a starting point

Public higher education institutions in the EU have not only pedagogical, scientific, administrative and financial statutory autonomy, but also cultural, patrimonial and disciplinary autonomy. This is assured by the statues of each institution according its respective mission statement and nature. Thus, given its pedagogical autonomy, universities have the capacity to produce the study plans, choose the subject of the curricular units (CUs), define the teaching methods, affect resources and choose the learning assessment methods and processes. Even if there are different guidelines and rules, autonomy is also a strong guiding principle in all levels of academia.

Starting a new course

Starting a new course includes several kinds of information. It's interesting to notice that the use of TEL can also affect in this stage (example from UAb):

· Responsible teacher and workload in the course;

· Learning objectives ;

· Justification of the modular design of the contents, the methodologies and the teaching and learning activities, in order to support both the curricular development, as well as the articulation between synchronous and asynchronous distance activities, and the face-to-face sessions;

· Syllabus;

· Demonstration of the coherence of programmatic contents with the learning objectives of the curricular unit;

· Specific teaching and learning methodologies of the curricular unit articulated with the pedagogical model (with indication of the number of students per class/group for the relevant typology of contact hours, and with reference to the material and technological means used in each typology);

· Assessment;

· Demonstration of the coherence of teaching methodologies with the learning objectives of the curricular unit;

· Mandatory bibliography and other learning resources specific to DE.

The role of evaluation

One important aspect in the initiation of a course is the evaluation of current programmes and the needs of the society. In preparing the curriculum, feedback is collected from various places. Quality monitoring in teaching and learning takes place at various levels, articulating the evaluations carried out and the production of semester and/or annual reports. In UAb the monitoring process includes the following levels:

• Curricular Units (UC) - It is up to the professor responsible for the UC to prepare a self-evaluation report of the UC - Curriculum Unit Report (RUC) - in which an overall analysis of the functioning of the UC is carried out and a definition of an improvement plan whenever there are unsatisfactory results.

• Degree – At the programme level's self-evaluation, the course coordinator is responsible for preparing the Course Self-Evaluation Report (RAC), based on the reports of the UC and other elements (e.g. survey results), and includes a critical analysis of the key aspects for the success of the course. The structure of the RAC is defined by the Rector. This report is the subject of an opinion by the Monitoring and Improvement of Study Cycles (CAM), and it is up to the Quality Evaluation Council (CAQ) to comment on the aspects it deems relevant. These reports are approved by the Rector and its results are part of the Institutional Activities Report and the RASIGQ.

• Department – The Department Director is responsible for the preparation of the Activity Plan, where the objectives, activities and indicators should be presented, aligned with the strategic objectives of the institution, as well as the preparation of the Activity Report that should integrate an analysis of the main activities, based on the indicators and goals defined.

In addition to course evaluation, other evaluations are also made. As an example in the University of Turku feedback is collected at the end of the first studying year (First year experiences), after studying three years (nation-wide survey for bachelor students). The Career Services of the University of Turku produces information on students' placement in the labour market. Feedback is collected also after each course. Teachers are responsible for collecting this feedback.

To develop teaching and learning, only collecting feedback is not enough: it is also important to develop practices on how to utilize collected data. There is great variation in these practices in different universities.

\*\*

UAb:

The proposal to create a degree or study cycle is taken to the Coordinating Council of the respective UAb's Department, or more several Departments in the case of a joint degree, to propose the creation, transformation and extinction of courses and approves the respective study plans. Next, the proposal is reviewed by the Pedagogical Council of the university, in which the students representatives have a seat. The body is heard before the Scientific Council also produces a recommendation. Finally, the Rector is asked to approve the proposal. Only the Rector has the ability to decide on the creation, transformation, suspension and extinction of degrees and other formal courses.

If the degree to be provided involves another Portuguese higher education institution, the proposal for its creation must also be approved in that institution's governing, scientific and pedagogical bodies in accordance with its respective rules and procedures.

\*\*

The legal framework for Distance Learning in Portugal changed with the publication of the Legal Regime of Distance Higher Education (Decree-Law No. 133/2019, 13 September) which, in terms of quality assessment, introduces a number of requirements for the design of new provision and additional criteria to be consider in the evaluation of study cycles taught at distance.

All university courses of a formal nature are the subject of cyclical evaluation by the Higher Education Evaluation and Accreditation Agency (A3ES) which credits them for 1, 3 or 6 years, according to the degree of compliance with the various parameters determined by A3ES, that may not approve the courses.

When submitting an already existing programme for accreditation, or when reformulating it, feedback on each CU which is part of the study cycle is collected in every academic year, at the end of each semester. This conducted through (pedagogical) surveys which are produced and launched under Vice-Rector Innovation and Quality's supervision, with the support of the university's quality assurance office. Additionally, the Coordination of the Cycle of Studies collects feedback from the students, either formally or informally which is shared by them in a specific forum in the online learning environment. Finally, teachers collect feedback within the course activities, usually at the end of the semester.

USGM

The Guidelines for didactic programming provides the University with a framework for the design of the didactic offer and for an annual and multi-year planning process predictive. It outlines the actions to be implemented in order to ensure the consistency of the didactic offer, in compliance with the official criteria set for initial and periodic accreditation of premises and study programmes (as foreseen by the Ministry of Education). The Guidelines have been updated to the current national laws, the University Regulations, the University Quality Policies and the Strategic Plan.

Faculties intending to activate a new Curriculum (Corso di studio) are required to produce a Curriculum project in accordance with:

· Ministerial laws;

· The University Strategic Plan and guidelines of the Managing bodies

· The University Didactic Regulation

· ANVUR[1] Guidelines

· CUN Guidelines on how to draw up didactic regulations[2]

It has to include:

* The positioning of the Curriculum with respect to any other Curriculum in similar fields, active in the University, on the territory and in other telematic and non-telematic universities;
* The training demand that the training project intends to answer and the training objectives that the Curriculum wants to achieve; the requisites requested at the entrance;
* The expected employment opportunities, the initiatives aimed at promoting the employability of future graduates, the link with the next level of university education.
* The different stages of planning, production and realization of the courses are duties fully accountable to the Marconi’s teaching staff and the technical-administrative staff and they take place at University’s premises, which are fully equipped and where specific professionals can give support in these activities.

(Section on job market stakeholders moved to that section)

Then a course design document is drafted, detailing the specific learning objectives, the learning areas and the expected learning outcomes. Afterwards, professors, who are fully in charge of the realization of the course contents, prepare lessons respecting quality standards with the help of the instructional designers of the involved faculties. Furthermore, the internal sector for didactic multimedia production comprises the following professional figures that support the professors in the creation of the learning objects:

* experts in the field of various disciplinary areas together with content editors/managers for the preparation of didactic materials
* programmers and developers that implement the e-learning platform
* audio/video technicians for the shooting, production and post production of the video and audio lessons
* graphic designers for interface and multimedia graphics production.

Throughout the delivery of the courses two kinds of Tutors constantly support learners: Didactic tutors, more focused on giving assistance on course contents, and Technical tutors, who take care of the technical supports of the learning path.



* [1] ANVUR is the Italian National Agency for the Evaluation of Universities and Research Institutes (ANVUR) and it oversees the national quality evaluation system for universities and research bodies.
* [2] CUN: The ITALIAN NATIONAL UNIVERSITY COUNCIL (CUN) is an elected body representing the Italian University System. It serves as an independent source of advice and recommendations to Ministry of Education, University and Research on matters considered relevant to the University System, such as national programs, policies and administrative practices affecting Higher Education, classification and definition of academic fields and disciplines for the purposes of recruitment, teaching and research, funding issues, approval of University teaching regulations.

[1] [Law No. 62/2007 of 10 September](https://dre.pt/application/file/640244)

**Goals set in the organizational strategy and other governing documents for overall curriculum planning and development**

The role of governing documents beside academic autonomy has increased during the last decades. Universities have strategies, policy programmes and quality policies/regulations. These documents can be very detailed and also tackle curriculum planning and development. Even the responsible parties can be mentioned. In UAb the key reference document is “The Pedagogical Model for Distance education.” It plays a critical role in the university's organization of the teaching and learning processes states in this regard:

“The variant of the pedagogical model for the 1st study cycle is based on three core elements that make it possible for the teacher to organize and structure learning in each curricular unit and for the students to know their role and responsibilities: the Curricular Unit Plan (PUC – Plano de Unidade Curricular), the Formative Activities Plan (PAF – Plano de Actividades Formativas) and the Learning Card (CAP Cartão de Aprendizagem).

[...] The implementation of the model in the 2nd study cycle takes into account the distinct nature of this cycle - post-graduate studies - where students are already relatively autonomous and master some essential skills. It is important to stress that students’ work should have innovative characteristics and evolve with a high level of autonomy.”

In the policy document of the UTU curriculum planning is mentioned as follows:

“In curricula planning, special attention is paid to the clear description of learning outcomes, order of studies, and professional life relevance. The goal is to ensure the even distribution of studies throughout the academic year and to improve student well-being.

Responsible party: Vice Rector responsible for education, vice deans responsible for education.”

Documents are made even more concrete by e.g. “statutory letters for curricula planning for faculties” by a vice-rector, which are more flexible tools for guidance.

**The description of the needs of working life and the industry in the governing documents**

Working life and the industry issues were tackled in the governing documents of all EU partner universities. In the UAb the whole organizational structure is supporting this orientation:

“Internally, UAb promotes a decentralized organizational structure, which favors a larger contact and proximity with society and with its students and trainees.”

Labour market needs are also mentioned in the Strategic Plan:

“The UAb is dedicated, by its mission, to play a relevant role in meeting the targets set by the European Union and Portugal with a view to achieving the Europe 2020 strategy, in particular by contributing to higher training and qualification, both in 1st, 2nd and 3rd cycles, as well as in the broad scope of lifelong training, creating conditions for the modernisation of labour markets, with a view to increasing employment rates.” (UAb Strategic Plan, 2020, p. 4)

“[…] it is imperative to strengthen the leadership of the Open University as a reference university for flexible, scalable and compatible training models with different domains and activities of the digital society and with active policies to update knowledge in a lifelong learning perspective, through the incorporation of procedures, technological and pedagogical resources aimed at increasing competitiveness and improving services.” (UAb Strategic Plan, 2020, p. 5)

In Italy the role of job market stakeholders is mentioned in Italian law. The planning phase of new courses starts with consultations between the Dean of Faculty, the Educational Coordinator, students, professors, scientific and professional organizations in order to identify the functions, competences and professional profiles related to the new course. This first proposal is then discussed and, in case, finalized through consultation with job market stakeholders. This phase is mandatory according to law. USGM also strongly encourages these connections continuously in order to offer always updated courses.

In the UTU working life relevance is one of the key areas in the policy plan of the university. It is stressed that employers should be engaged in curricula planning whenever possible. Furthermore, staff members involved in curricula development are advised to ensure that curricula develops professional life competences and correspond to the needs of professional life. Working life relevance is suggested to be planned also in a collaboration between the faculties.

In the governing documents also some concrete means are mentioned. In the UTU it is stated that the number of project studies organised in collaboration with employers is increased and alumni’s expertise is utilised in teaching. In the vice-rectors statutory letter for curricula planning to faculties it is stated that the development prospects of the field as well as the analysis of the needs of the professional sector are taken into consideration in the curricula planning and the representatives of professional life are consulted. It is also pointed out that general transferable skills are described in the curricula in a similar manner as subject competence. These include, for example, problem-solving skills, critical thinking, information retrieval, analysis and application, entrepreneurial skills, and the ability to communicate and collaborate. Faculties are encouraged to strengthen the professional life relevance of education both in basic and doctoral degrees by involving professional and business life representatives in the curricula planning. Alumni collaboration should be used in the planning of education and services.

Also examples on how developing working life skills can be supported in the curricula are sometimes presented in the governing documents. The studies can include separate working life courses as individual entities, or sections developing working life skills can be integrated into courses. Through the choice of teaching methods, students can be introduced to commonly used working methods in the working life in the field. Studies can be conducted in the form of working life-oriented student projects and a supervised internship, which is part of the studies.

**TEL/online learning as a part of the overall strategy for institution’s development**

In all of the EU partner universities online learning is strongly represented in the overall strategy for institution´s development. In fact, UAb and USGM are fully online universities.

UAb started as a paper-based distance education university. From 2007 onward, UAb become a fully online university as part of a vast process of strategic transformation. In just 3 years, all of the educational UAb provision both formal (1st Cycle - Bachelor's Degree; 2nd Cycle - Master' degree; 3rd Cycle - PhD) and non formal (Lifelong Learning) was redesigned according to an innovative virtual pedagogical model (known as MPV) developed in house with the support of a panel including the top international experts in eLearning which became a reference in the field. This was accompanied with a high number of other ambitious innovation programmes which included the complete retraining of all faculty in online teaching and tutoring, and also the creation of an advanced R&D lab - the Laboratory of Distance Education and eLearning (LE@D). Later, UAb also pioneered with the design and implementation of the world's first institutional pedagogical model for MOOCs.

In USGM digital innovation is a strategic priority. USGM is the first Italian Open University officially recognized by the Italian Ministry of Education. “Teaching and IT technologies innovation” is one of the pillars of USGM mission, QA framework and of the strategic guidelines. USGM guarantees that its training action is constantly supported by rigorous and relevant research in the e-learning field. The technological didactic model of distance teaching/learning, adopted by USGM capitalizes over 15 years of experimentation USGM, effectively boosts the best design, production and delivery of services/content of online education, and the internal know-how. The University main aim is to enhance and promote educational research and teaching innovation. This is done by:

* Focusing the attention on the learning potential of students
* Providing a didactic methodology and innovative technological tools in order to facilitate and personalize students’ studies, following the benefits and the characteristics of the e-learning
* Developing theoretical and practical models designed to ensure a continuous improvement of the learning environment, always reflecting the best national and international standards.

UTU has strong traditions in using technology in teaching and learning. There have been research and development units (Development Unit for Distance and Open Education, Unit for Educational Technology) about 30 years ago in the field. In 2000 the first “Virtual university strategy of UTU” was published. In the current Policy Programme of UTU, strengthening teachers and students’ digital competence and digital learning and teaching environment by e.g. developing digital teaching platforms and educational information resources in collaboration with other organisations are among the key areas. UTU will also actively participate in the preparation and implementation of a national digivision for higher education.

UTU: Furthermore, in the vice-rectors statutory letter for curricula planning to faculties, it is stated that availability of teaching without time and place constraints is a key strategy area of development in curricula. When planning the realisation of teaching, it has to be taken into consideration that, in the future, approximately 30 percent of studies will be organised without time and place constraints. Approximately 70 percent of teaching will be organised on campus. The pedagogic guideline is that mass lectures should be organised so that participation is possible from different localities and campuses in Western Finland (Turku–Rauma–Pori), also preferably without time and place constraints (high-quality recordings of lectures, shared through Moodle). The expansion of online learning strongly increases the need for student guidance and small group contact teaching. To guarantee a high-quality learning experience, small group teaching and guidance have to be considered in the curricula planning.

In addition, the institutional policies for Continuous learning support TEL/online learning in the curricula level. When planning curricula, it should be considered which parts of the degree will be offered as continuous learning opportunities (Open University education, MOOCs, microcredentials) and how non-degree education can supplement the contents of degrees. The faculties will solve on their part how continuous learning will be realised in their education.

UAb: Following up to this the university has conducted a cyclic review of its pedagogical model and practices based on the continuous output of its R&D lab. Consistent evidence collected through the years has shown the success of UAb’s transition to online distance education and the creation of innovative educational practices. The objective data collected regarding students’ studies and their satisfaction regarding the university’s work also confirm the model’s positive role.

State-of-the-art research in DE, which is a priority for UAb, is developed in close coordination with LE@D, the R&D lab which is funded by the Foundation for Science and Technology (FCT). Its large portfolio of research projects, most of them internationally-funded, explore emerging topics and advanced areas such as open education and MOOCs learning design, digital assessment, gamification, mobile learning, digital skills development, learning analytics, accessibility support technology in virtual higher education, virtual mobility.

USGM: The University is strongly committed in the ongoing adaptation in order to match with actual needs. The technological didactic model of distance teaching/learning, adopted by USGM capitalizes over 15 years of experimentation USGM, effectively boosts the best design, production and delivery of services/content of online education, and the internal know-how. Over time the University responded dynamically to changing lifestyles and the always new training needs expressed by students, Academic, administrative and technical staff (Orientation tutor, Disciplinary tutor, System tutor, Instructional Designers, Subject-Matter Experts, Content Editors / Managers, Audio / Video Operators, Graphic Designers, Software Developers). The University strategic vision is focused to ensure the best quality of the Courses.

**Laboratory activities within curriculum planning**

In all EU partner universities, laboratory activities are part of curriculum planning in various fields . In these courses the laboratory activities are studied: planning, carrying out a research, analysing the results, presenting the results orally and writing a report.

**Laboratory activities in use (e.g. in presence, virtual, remote labs etc.).**

All EU partner universities have both in presence and virtual laboratories. UAb and USGM have also remote laboratories. UTU being a campus university, virtual labs are not replacing real laboratories, but complementing them (see 4.5.). In UAb the use of virtual laboratory activities is foreseen in UAb's pedagogical model. These innovations still demand high investments. In UAb virtual laboratory activities are conceived to foster a sense of community, as follows: “The virtual campus is key for academic experience, providing a sense of belonging to a community, something that should be emphasised with students by promoting content and mobile learning technologies, the use of virtual laboratories or other resources and strategies that facilitate both learning and a sense of belonging.” (Quintas-Mendes et al, 2019, p. 22).

In USGM specifically the remote laboratory is used for:

Electrical Engineering (EE)

Thermochemical and Electrochemical Energy Conversion Systems (TEECS: Reactors and Fuel Cells)

Management of Advanced Powertrain Systems (MAPS: hybrid and alternative fuels vehicles, powertrain and road management).

**Virtual/remote labs in terms of technological infrastructure and pedagogical model applied**

The following technological infrastructures and pedagogical model are used:

* Labster virtual laboratories ([www.labster.com](http://www.labster.com)). Labster simulations are complementing real laboratory activities in different ways: 1) students play the simulatations before the laboratory session to get more confidence to work in the real lab. 2) students play the simulations after the lab session. This is supposed to deepen the learning which has happened during the lab session or 3) students play the simulations during e.g. incubation times in the laboratory session. The use of Labster is pilotted and collecting experience and feedback from teachers and students. The next step is to test different pedagogic models and choose/develop the best to be used. (UTU, The Institute of Biomedicine)
* Virtual Programming Lab (VPL). For programming coupled with its e-learning platform (virtual learning environment). Provides students with a complete programming environment, and the faculty the means to create and evaluate code development exercises. (UAb)
* Virtual reality environments OpenSimulator. A virtual reality server based on open-source technology, as alternative to Second Life. The server installed and configured in the UAb is used in the context of Virtual Reality CUs, where students can register and create their avatars and scenarios within their projects. (UAb)
* Linux and open source software. A cluster to support parallel programming activities - used old computers to build a first cluster, a second cluster is starting. It supports assignments of just one course, on parallel computing. , and requires a space with conditions to have a few computers always running. (UAb)

The pedagogical model in courses that use these labs, does not change, the assignments are like any other, but exist these extra tools, to provide some automatic feedback, that helps in the evaluation process.

**Affect of the COV-19 pandemic to curriculum planning practices**

The Covid-19 pandemic didn't have much impact in regard to curriculum planning practices. The only major change relates to exams. In USGM these changes were related to the assessment and the exams’ process in general. All universities during the pandemic had the possibility to hold the exams in distance modality. Therefore, USGM had to implement an updated strategy in order to accomplish to old and latest regulations.

The consequences of Education Institutions’ closure raised questions concerning students’ assessment of progress and the connected organization of mid-term/final exams. The crucial issue was “How to ensure a fairly assessment, how to discourage plagiarism in Higher Education Institutions?”

The technicians, in cooperation with the academic staff and the instructional designers, designed and implemented IT tools for the online written exams. Due to the pandemic emergency, USGM adopted new rules and strategy for the validation of online written exams. The following rules were defined for the validation of the online written exams. These changes are described in detail in the institutional report.

In UAb the change was related in the 1st Cycle of Studies Due to the pandemic all exams, as well as Master and PhD vivas that were formerly organized in a face-to-face environment had to be conducted in a fully online mode. Hence, faculty's specific training on digital assessment was reinforced. That change had also some effects on curriculum planning, highlighting the development of competences to address authentic and complex tasks. These are more suited to exams conducted in a fully online environment, where students are encourage to use various resources. This practice is to become the standard after the end of the pandemic.

### **2.2. Curriculum planning in practice**

***Planning the initiation of a course (e.g. needs analysis for demand and constraint identification etc.).***

Departments follow different strategies to identify social/market emerging needs and opportunities as well as to meet public demand. In many cases, proposals emerge from benchmarking exercises with other public universities. Also professors own research and expertise, ideas and the feedback from the students and university strategy and support can be a starting point of a new course. (These practices are partly described also in 2.1.)

USGM

The courses Design phase follows some strategic lines and it guarantees a general alignment of the design with the quality standards expected and declared in the University Quality Policy and in the related documentation (e.g. "Guidelines for Interactive Teaching and Didactic Interaction ") and it foresees the analysis of the most suitable tools to meet the training needs of the discipline, the processing priorities to be assigned to specific disciplines, etc.

Several staff members intervene in the production process that regulates the functioning of the group.

· the Sector Manager (RS): supervises and monitors all stages of production;

· the Professors: records the lessons, provides the teaching materials;

· the Instructional Designer / Content Expert (ID): follows all the activities carried out during the production phase, cooperating with the Professor, the Multimedia Didactics (DM) and Multimedia Development (SM) groups. The ID verifies the produced material, so that it is always in line with the defined educational objectives, draws up and updates the required documentation. It supports the professor in the preparation of the didactic contents of the didactic materials proposed in the form of verification tests, textual summaries, exercises, etc. and storyboards for virtual laboratories, multimedia paths, etc.;

· The Audio / Video Production Center (CPAV): acquires and edits the audio-video files of the lessons recorded by the professors;

· The Multimedia Education group (DM): deals with the first level multimedia processing, characterized by less complexity and which includes content editing / management / packaging activities (text processing, creation of HTML pages, digitization of verification tests, packaging, etc.) .

· The Multimedia Development (SM) group: when foreseen and necessary, it deals with the second level multimedia treatment characterized by greater complexity; designs, adapts and implements applications and technological solutions with a high level of interactivity / multimedia, taking care of graphics and animations based on the information provided by the RS and the ID.

The production of the didactic material includes different types of products and therefore represents the most important macro-phase of the “Multimedia for Didactics and Creative Production - Courses” group.

Before starting the whole process, the teacher contacts the Course ID to plan and organize the production of the various teaching materials, in order to make the course complete and adequate to achieve the expected objectives. In this phase, the Teacher receives from the ID, as a real individual support training, the guidelines and models to be used for the production of the various contents. The use of the models guarantees certain quality standards and homogeneity for the different types of materials produced. The teacher can prepare slideshows to accompany the lessons, case studies, insights, verification tests, text summaries, exercises, etc.

***Taking into account different stakeholders (e.g. teachers, students, businesses and other actors in society) and their needs in the curriculum development***

The role and different practices to take into account the needs of the stakeholders have become stronger during the last decades. Faculties or departments can have advisory committees where different stakeholders are represented. Students are having their representatives along the teachers in faculty and department level committees as well as in General Council of the University, which is a top strategic oriented governing body, includes invited external advisors alongside student and teacher representatives.

(See also *2.1. Job market needs*)

***How is the content of the course designed?***

UTU:

The curriculum defines the main content of the course. The curriculum is prepared in departmental level and approved in faculty board. The university also encourage faculties to build courses together with other faculties. The students have their representatives in all levels. One important source for curriculum development is the student feedback from the previous course.

UAb

The design of the course content may be designed either by a specific UAb teacher or a team of Faculty members or even in the framework of a multi-institutional team. In the first case, the course authors have a broad autonomy in the design process, mostly making use of research output openly accessible. In the second case, the team procedures are determined by the terms of agreement between the institutions involved. Usually, the content materials are produced from scratch.

In both cases, the teachers involved in the creation of the new course determine the programme structure (many of the 1st cycle courses designed by UAb have a major/minor organization), the learning objectives, the skills and competences that students must acquire and develop, select the target group, set the access requirements and outline the syllabus, always bearing in mind that the course will be offered fully online and must apply the UAb's MPV directives.

UAb teachers have access to technological training on a regular basis, allowing them to have the necessary skills to integrate the use of new technologies in the design of courses, taking into account the pedagogical objectives they intend to achieve. Teachers have the support of Digital Production Services (SPD) that produces multimedia resources to support the teaching of CUs or with other pedagogical objectives.

Teachers, taking into account the objectives and competencies determined, choose the resources they will use, which should preferably be OERs. In the case of resources that are written text, the choice of OERs is the one that best suits the profile of the student of the UAb, which is mostly an employed adult, often with family responsibilities and, therefore, with little or no availability to go to a library. In addition, the economic aspect must also be taken into account, as in Portugal books are rather expensive. In addition to written texts, the teacher tries to integrate in the CUs other types of multimedia resources (videos, podcasts, etc.) that serve the purposes of the CU.

There is a team of instructional designers who works in close coordination with teachers, work to make clear the goals and objectives established by the teacher, chose the adequacy of contents, design learning activities and propose different forms of assessment.

*USGM: ks. ed.*

* *Aiemmin taisi jo olla tätä*

***In faculty level, does the curricula design reflect any specific pedagogical practices and innovation?***

UTU:

The curricula does not reflect any specific, tight pedagogical practice. However, university has promoted and supported ie. flipped learning by organizing courses and support material for teachers interested in such a topic.

UAb

The curricula reflects the UAb’s Pedagogical Model for Distance Education, and its Development Scenarios. Moreover, it is reinforced by the results of the R&D projects, namely those hosted by LE@D. It is also worth mentioning the existence of the following members of the UAb’s Rectoral Team: vice-rector for research, knowledge transfer and scientific dissemination; vice-rector for teaching, training and academic organization; vice-rector for innovation and quality; pro-rector for pedagogical innovation and management.

USGM: ks. ed.

***In faculty level, what way is working-life relevance discussed in the curricula?***

UTU:

The competence gained with the degree also includes transferable skills needed in   
professional life in addition to the in-depth knowledge of the field and its methodology.   
These include, for example, problem-solving skills, critical thinking, information retrieval,

analysis and application, entrepreneurial skills, and the ability to communicate and   
collaborate. These skills should be described in the curriculum in a similar manner as subject   
competence. Faculties are encouraged to strengthen the professional life relevance of education both in basic and doctoral degrees by involving professional and business life representatives in the curricula planning. Alumni collaboration should be used in the planning of education and services. The curriculum normally includes internship at least as an option, if not mandatory.

UAb

The competence gained with the degree also includes transferable skills needed in professional life in addition to the in-depth knowledge of the field and its methodology. These include, for example, problem-solving skills, critical thinking, information retrieval, analysis and application, entrepreneurial skills, and the ability to communicate and collaborate. These skills should be described in the curriculum in a similar manner as subject competence. Faculties are encouraged to strengthen the professional life relevance of education both in basic and doctoral degrees by involving professional and business life representatives in the curricula planning. Former students' collaboration is also used in the planning of education and services. The curriculum may include an internship at 1st Cycle of Studies level, at least as an option, although not mandatory.

USGM

* Ehkä tämän osion ens.kohdassa jotain

***What is the teaching staff-student ratio?***

UTU:

Especially when it comes to online teaching, the concept ”teaching staff” is problematic: In online teaching also support personnel for teaching and learning is needed. That´s why different options/numbers are presented here to have a closer overview of the current situation.

The teaching staff in UTU consists of following groups (figures year 2020):

1. professors 327
2. university teachers and lecturers 549
3. other teachers and researchers 1137 (also researchers have teaching in their job descriptions)

Thus, there were altogether 2012 persons in positions including teaching in the year 2020.

In the year 2020 there 20 768 students in the University of Turku (Bachelor 8247, Master 6244, Doctoral and Licentiate 2012, Other 4293).

Thus:

* teaching staff-student ratio = 0,097 => 10,3 students/teacher

Apart from that the amount of support personnel for teaching and learning in year 2020 was 417. In addition for that there were 836 in category “other personnel” (general administration etc.). Thus, altogether there were 3265 persons working in the University of Turku in 2020. However, support personnel and other personnel are not included in the ratio above.

UAb

At course level, the teacher-student ratio is 1 teacher for up to 60 students (1st Cycle courses) and 1 teacher for 10-25 students (2nd and 3rd Cycles). At an institutional level, the teaching staff-student ratio is 1 teacher per 70 students.

USGM

The teaching staff-students ratio is 1 teacher for 20-25 students.

## **Chapter 3. Designing and implementing and a TEL course**

### **3.1. TEL as a practice in institutions**

**Is TEL or online courses a usual practice in your university, or do you organize teaching like this only due to pandemic?**

UTU:

The use on TEL has been an integrated part of teaching and learning in UTU for decades. Of course pandemic has increased the use of TEL in terms of users and the ways TEL is used.

UAb:

See sections 2.1. and 2.2. above. Being a dedicated distance education HEI, online learning as UAb's core pedagogical practice. The pandemic had no significant impact on that respect. Moreover, the [UAb’s Pedagogical Model for Distance Education](https://repositorioaberto.uab.pt/bitstream/10400.2/2388/1/MPV_uaberta_english.pdf) (Pereira et al, 2008), complemented by the follow up document [Development Scenarios](https://repositorioaberto.uab.pt/bitstream/10400.2/8539/1/MPV01_ENG.pdf) (Quintas-Mendes et al, 2019), sets a TEL-based model of teaching and learning which also includes blended and hybrid learning situations.

USGM

Being an online University, digital innovation is a strategic priority for USGM. “Teaching and IT technologies innovation” is one of the pillars of USGM mission, QA framework and of the strategic guidelines as iot is also outlined in the University Strategic Plan 2019-2021. USGM guarantees that its training action is constantly supported by rigorous and relevant research in the e-learning field. The University main aim is to enhance and promote educational research and teaching innovation. This is done by:

- Focusing the attention on the learning potential of students

- Providing a didactic methodology and innovative technological tools in order to facilitate and personalize students’ studies, following the benefits and the characteristics of the e-learning

- Developing theoretical and practical models designed to ensure a continuous improvement of the learning environment, always reflecting the best national and international standards.

**How many, in what level? (e.g. graduate/postgraduate).**

UTU:

TEL is used in all levels of teaching in different ways. Moodle platform is used at least as a way to deliver course materials in most courses. Often also collaborative tools of Moodle are used, e.g. peer feedback. More and more often the lectures are recorded with the technology which is available in some lecture halls. Electronic exams in different modes are used more and more. Some courses are fully online. Due to pandemic the use of videoconferencing has increased dramatically.

UAb:

At all levels.

USGM:

* See above

**Is TEL part of the overall strategy for your institution’s development and how?**

UTU

The overall strategy of UTU (2020-2030) is only about 5 pages. One of the key points in the strategy is *“We are a forerunner in the staff and students’ digital competence and expertise”*. This is operationalized in the Policy Programme with a goal “*We inspire unique learning experiences and outstanding learning outcomes.”* For this goal is a policy titled “*Modern and accessible learning and teaching methods”.* Under this policy are eight actions. For every action the responsible parties are named. The follow-up of the status of the actions is an ongoing process.

UAb:

Yes, taken as an encompassing concept, it can be said that TEL is part of UAb’s DNA. Learning online is *per se* a form of learning enhanced by technology. Moreover, other technologies are used in combination in the Virtual Learning Environment. The UAb's Statutes refer that "due to its vocation and nature, the University uses, at all times, in its teaching activities, the most advanced methodologies and technologies of distance learning, instituting (...) as a distance learning platform, through the establishment of partnerships with other universities." This idea has been reinforced, assuming itself as a way to give an adequate response to current dynamics and requests, so as to foster innovation, in all organizational, administrative, scientific and pedagogical processes.

One of the axes of action presented in the institution's Strategic Plan 2019-2023 points to the need to consolidate the competence and competitiveness of the UAb in the digital world [A COMPETENT AND COMPETITIVE UNIVERSITY IN THE DIGITAL WORLD], assuming the technological update, in this context, a particular relevance. It is intended as a university able to adapt to changes and respond to the current needs of society, incorporating the resources and technological developments to provide a better service and increase its competitiveness. This policy will strengthen the application of technology in the teaching-learning process with regard to the entire educational offer of the UAb (formal - all cycles - and informal).

USGM

* See above

**Is there a strategy in your institution for digital innovation, TEL being a part of it? Is this strategy known within the institution at all levels?**

UTU

Digital innovations are a part of the Policy Programme. The are mentioned as part of teaching *(“Training and supporting teachers and supervisors in using modern learning and teaching methods, for example, to increase learning that is not dependent of time and place.”)* and as a part of “Research prerequisites and support services*”* there are actions such as “ Developing research equipment and its usability and accessibility. Advancing the joint use of equipment both internally and with regional partners” and “*Supporting the acquisition and joint use of research data, data processing and management, for example, with artificial intelligence solutions; Promoting the use of computational science.*” The strategy and policy programme are still new and are better known step by step.

UAb

Yes in both cases.

USGM

* Ks. ed.

### **3.2. Technology in use**

**What kind of technology are you using (e.g. platforms, videoconferencing etc.).**

UTU

* ***Platforms:*** 
  + *Moodle,*
  + [***ViLLE***](https://oppimisanalytiikka.fi/en/ville#introduction)*(collaborative learning platform, developed by the Centre of Learning Analytics, University of Turku)*
* ***Electronic exams***
  + *Exam**(rooms with video surveillance for electronic exams in the university)*
* ***Videoconferencing:*** 
  + Zoom
  + Teams
  + Adobe Connect
  + Skype for Business
* ***Recording and presenting lectures:***
  + Echo360
  + Adobe Presenter
* ***Collaborative platforms:***
  + Flinga (message board)
  + Messagewall (for large seminars)
* ***Course feedback:*** Webropol
* ***Electronic thesis process:*** 
  + *UTUGradu process* includes an electronic originality check (plagiarism detection), examination and approval process, electronic publication, and electronic archiving
* ***Student databases***
  + HOPS (personal study plan)
  + Peppi (courses, timetables etc.)

**UAb:**

The virtual learning environment is based on a customized version of Moodle. Most used features include forums, workshop, wiki, glossarium and hot potatoes test. Other technologies used by teachers in UAb courses include:

* Web 2.0 tools/software– e.g. Facebook, Twitter, Flickr, Instagram, Wikis, WhatsApp, podcasts/videocasts, and YouTube

· Mobile learning apps, Simulations, Virtual / Augmented Reality, Digital narratives apps, Learning analytics (Moodle Insights), Intelligent agents / Chat Bot (Watson technology from IBM), E-portfolios, Blockchains

· LimeSurvey, Zoom, Power BI, NVivo, SPSS, LaTeX, Urkund, H5P plugins

· Technologies associated with gamification designs (H5P and Game plugins, and apps to present online scores, badges etc.)

Zoom is only used for meetings with staff or special examinations, not in classes.

A concrete example of the combined use of these technologies can be seen in online teaching of mathematics and statistics. Due to the large scale of course classes which presents several challenges that need to be addressed through appropriate measures, the goal of these is three-folded: increase the motivation of the students in a not so beloved scientific topic; easily monitor the overall and individual progress, which becomes harder for large scale classes; and increase feedback speed in the learning process.

In this way, we have implemented the following items and concepts, based on a gamified design of the learning process, leading the students to more important tasks throw progress and small rewards. These include:

· Progress score: at each time the student knows what percentage of talks he has concluded and this score progresses as he completes more and more tasks, in the given order;

· Online Challenges: at the end of each topic the student performs an online test to undertand and monitor his progress. For each submission, the student receives automatic feedback related with his performance at an answer level, that is, for each correct or incorrect answer, the student gets appropriate feedback that directs him to the correct way of solving that particular question within the challenge;

· Badges: Challenges and other talks that are completed in a satisfying manor translate in medals that are then presented in the students profile. Though badges have no direct effect in the final grade, preliminary results show that students that try to get more badges have better performance than others.

· Narrative: along each topic there is the release of a new episode of the narrative. The narrative tells the story of a female student of the lecture that has the same issues that most adult students in day-to-day life have: she has to coordinate online studies with active professional and family activities, hoping that finishing the course will lead to better professional conditions. Moreover, the episodes are centred in real life applications of the topic being studied. This allows not only to revised the topic under studying and relate it to real problems, but also to create empathy between the students and the narrative's character, which has proven to engage students in study.

Most of these markers also give the teacher a general overview of how the overall class is progressing, while it is also possible to see if a particular student is getting behind.

Along these, evaluation has also been performed through online tests, which allows to generate different randomly generated tests between students while allowing also for fast and individual feedback.

The overall perception of the students with these methodology has been very satisfying and not only it has increased participation, it has also increased the average final classification.

**USGM:**

The technologies used are:

ü Virtual classrooms (synchronous learning event – collaborative learning): it is the most complete and efficient teaching/learning object. It is used on a synchronic modality to enjoy learning: thought a simultaneous connection, teachers and students have the possibility to participate on online training sessions offering, as traditional face to face lessons do, knowledge transmission and the possibility to interact.

Main tools used during the Virtual Classrooms:

· CO-SHARING of educational material in different digital formats: this option is the most used by our Professors to produce virtually one of the main features of a lecture, as the Professor shares a document to be presented, explained and commented

· CO-BROWSING: sharing the web-browsing can be useful to show students how to look for information to go further on a particular topic related to the lecture

· WHITE-BOARD: it is a board shared with the participants to the lecture, where the professor can write, draw or for example explain a formula that is not covered by the learning material

· SURVEY: it is possible to provide a survey on the lecture to the participants. The feedbacks provided are crucial to understand students’ potential shortcomings and doubts and then to go through them in order to clarify.

· RECORDING: It’s possible to record the virtual classroom in order to provide it once more in the future.

ü Video lessons: Lessons recorded by the teacher or expert, developing the program of a specific discipline or subject, dividing it into topics and key concepts. Since these are learning objects designed and made for an asynchronous fruition, they can be enjoyed from Learning Management System platforms at any time of the day and without limitations.

Video/audio lessons may be accompanied by screens the explaining the content, facilitating its memorization through the schematization and the graphic/textual highlighting. This is an innovative type of lesson, in which the teacher can use state-of-the-art technological tools, capable of presenting content in an effective, complete and immersive way, through the use of synchronised screens, sound effects, video animations, educational software for interactive and multimedia reproduction, etc.

Within educational courses at a distance, video/audio-lessons make it possible to achieve the following objectives:

* as for all learning objects and teaching materials typical of asynchronous distance training, offering an object of learning whose enjoyment is customisable thus allowing a study experience that can be enjoyed and possibly replicated depending on the requirements of the individual learner.
* ensuring the efficacy of traditional face-to-face lectures, duplicating it according to the criteria of asynchronous distance training;
* providing in "lesson" mode, through the use of audio/video recording, all the main tutorial content of the discipline;
* facilitating the preliminary didactic design of content, according to the standards of content structuring, duration, editing of visual components (PPT, cartels graphs, etc.) and according to the standards of shooting, direction, postproduction, etc.;
* allowing a greater degree of interest and involvement on the part of the learner, using the technological tools available to the teacher during the recording (PC, LIM - Interactive Whiteboard, multimedia educational software for exercises and simulations, slide shows, etc.).

ü Self-assessment and exercises: the online self-assessment tests are provided for each learning object, giving the students the opportunity to test their knowledge and get immediate feedback on their understanding.

ü Multimedia case studies: A case study is a story that has a strong educational meaning and it is developed in a narrative form, so as to put learners in a real situation, in which, after a careful analysis of the situation, they are required to formulate an interpretative hypothesis and to take decisions for the resolution of the case. A case study, therefore, does not provide general theories, but practical situations in which to apply and to test the validity of the theories the student has previously assimilated.

This object is very useful to test learner’s ability in setting priorities, in developing strategic plans, in making decisions, in applying theories and principles.

ü Virtual laboratories

ü Simulations

ü Serious games

These last three technologies are virtual education environments, foreseeing feedbacks on the practical application and the real experience of learning and the enhancement of correlations and contaminations between contents pertaining to different subject areas.

Simulations, Virtual Labs and Serious Games reinforce and stimulate a personal active work on a particular theme, the creation of a cognitive journey, problem solving, immediate check of choices and actions, sometimes through the role play technique. In this kind of learning objects and techniques the work focus is the learning itself. The main aim is to transfer procedures and practices to the students, who then will be able to use them in their future professional sectors.

In particular *gamification* is a very effective way to convey messages and to foster active behavior. The objective of the game is to devise solutions for a challenge or a problem; the ludic interaction allows the user to view common situations from different perspectives. The game should be based on interesting plots with avatars acting as imaginary alter-egos of the user. Thanks to *gamification*:

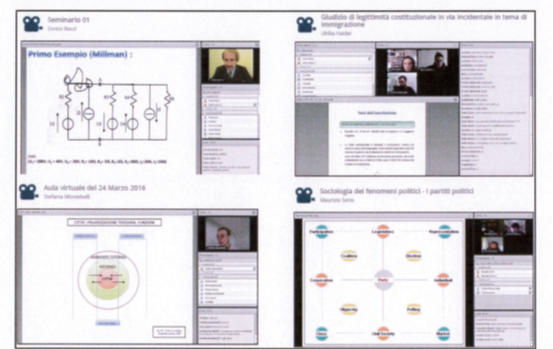
• the learning process is much easier;

• the actions taken by the player to achieve short or mid-term objectives can be measured and evaluated;

• feedback is immediately available;

• resources management is one of the required skills;

• The acquisition of a positive reinforcement is the reward.

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**Virtual Classroom and Webinar Screenshot**

### **3.3. Course development process**

**How do you plan the initiation of a course (e.g. needs analysis for demand and constraint identification etc.) in TEL/online courses compared to face-to-face courses?**

UTU:

Basically, there are no differences. The profile of the students attending the course (e.g. if most of them are already at work) can put pressure for teachers to utilize online solutions more than in cases where most students are still in campus.

UAb:

UAb does not provide face-to-face courses.

USGM:

* Ei tarjonne muita kursseja.

### **3.4. Stakeholders involved and their roles and tasks**

**Do you involve students in TEL/online course design?**

UTU:

In Finnish system the autonomy, responsibility and the opportunities of a single university teacher are big. The curriculum sets the limits of the course. The practicalities can be decided by the responsible teacher. Students are taking part in the curriculum council.

UAb:

Students are involved through their representatives feedback delivered in the following contexts:

1. Pedagogical Council meetings (2 student representatives per department);

2. Department's plenary meetings (two students designated by the Academic Association of the University, one of whom representing the students of the first cycle and the other the students of the second and third cycles);

3. satisfaction surveys (at degree and CUs levels).

USGM

Students are constantly involved in the USGM quality assurance system, being asked periodically to give their feedbacks on the courses, on University’s procedures and services and, through the results of the questionnaires, their opinions have deep impact on the University (see point 2.1, page 11).

Moreover we have special Program Advisory Committee (in Italian Commissioni Paritetiche Docenti Studenti) for the evaluation of courses and that are composed by an equivalent number of professors and students.

A representative sample of students is also present in the faculty meeting (consigli di facoltà).

The following process governs the production chain of the Multimedia Development office, which also operates within the "Multimedia for Teaching and Creative Production" area.

Once the storyboard or the design document of the educational object has been received, the MDO proceed with the technical feasibility study and the theoretical fine-tuning of the features provided by the project. Based on the checks made and the type of product required, the architecture and language most suitable for the purpose are determined.

The implementation phase takes place through different tools:

· the so-called "Integrated Development Environment" (IDE), which is the development environment of the source code, specifically Jetbrains PhpStorm; this tool, in addition to facilitating the drafting of the code, helps the developer by reporting any syntax errors and providing various functions necessary for the debug phase (error detection);

· the source code of the archiving system through versioning and team working tools (http: //github.unimarconi.loc), with which it is possible, through the use of appropriate tags, to keep track of the implementation history of the code and of the various versions released over time; a tag (i.e. label, marker, identifier) ​​is a keyword or term associated with information (e.g. version of the code, user, fix, ...), which describes the object, making it possible to classify and search for information based on keywords, each of them is identified by a SHA-1 hash code of its content; Git is meant to run on all GNU / Linux based operating systems, but it also works on other unix-like systems, including BSD, Solaris, and Darwin; Git is extremely fast on POSIX based systems such as the above and can also be ported to a Windows environment.

Once the implementation phase is completed, the MDO proceeds with the identification and correction of one or more errors (bugs). This activity (debug) is one of the most important and difficult operations for the development of a multimedia product, often extremely complicated due to the complexity of the development software and delicate due to the danger of introducing new errors or behaviors different from those desired in the attempt to correct those for which the debugging activity was carried out. In order to limit or completely eliminate these eventualities, basic operations have been identified that the developer systematically carries out:

- identification of the bug,

- identification of the component or the portion of code in which the bug is present,

- identification of the cause of the bug,

- designing a fix for the bug,

- implementation and testing of the aforementioned correction.

The outcome of this set of operations is carried out by filling in a specially designed and archived technical sheet in digital format ("Mod\_1.0\_Debug\_oggetto.doc").

However, it is possible to identify bugs in the didactic object even some time after their online publication: the possible causes are attributable to frequent browser updates that often make some parts of the programming language used deprecated or the use of the didactic object on a multimedia support that was not available at the time of development and therefore not testable. In this case the source files will be reopened and corrections will be made respecting the procedures described so far.

The next phase is the publication on the LCMS platform and the contextual communication via e-mail to the Faculty ID, so that it can proceed with the functional / content debugging of the material. The ID checks and - if no changes are required - proceeds to request the SCORM packaging of the object itself to the coordinator of the Multimedia Education group, for the purpose of definitive publication. The coordinator of the Multimedia Education group assigns the processing with the procedure described above, at the end of which he archives the material on the server and communicates the final publication via e-mail to the ID, thus completing the production phase.

For the monitoring of the reference processes described in this procedure, the RS carries out periodic checks of the workflow through the internal management system DSMS - Data Streaming Management System and on the occasion of periodic meetings between the RS and the various Faculty IDs. In these phases, the workflows may be subject to changes / revisions, even in the face of any emerging priorities. During the meetings, or through e-mail communications, the general state of progress of works, both ordinary and extraordinary production, is shared, illustrated and commented on.

USGM (In earlier chapters)

**How is the content of the course designed?**

UTU:

The main content is included in the curriculum. The details are decided the responsible teacher.

**UAb**

**See 2.2.**

**USGM**

In 2.1.:

* Then a course design document is drafted, detailing the specific learning objectives, the learning areas and the expected learning outcomes.

**Is there any technical support for teachers in course design? Is support given at university, faculty or department level?**

UTU

There is technical support for teachers in course design. There are extensive support materials in intranet. Apart from that, there is also technical support in person in departments, faculties and in university level. However, the situation in faculties is different: some faculties have more support than the others.

UAb:

Yes. Technical support to teachers in course design is given at university level.

USGM (In earlier chapters, e.g. 2.1.):

* Professors, who are fully in charge of the realization of the course contents, prepare lessons respecting quality standards with the help of the instructional designers of the involved faculties. Furthermore, the internal sector for didactic multimedia production comprises the following professional figures that support the professors in the creation of the learning objects:
* · experts in the field of various disciplinary areas together with content editors/managers for the preparation of didactic materials
* · programmers and developers that implement the e-learning platform
* · audio/video technicians for the shooting, production and post production of the video and audio lessons
* · graphic designers for interface and multimedia graphics production.

**Are there any facilitators that support the learners? If there are, please elaborate: describe their role, tasks and the cooperation with the lecturer.**

UTU:

There is no university level facilitator system. However, because individual teachers have much responsibility, some may have systems of their own.

UAb:

***Tutor***

Apart from the teacher, students receive learner support from specially trained tutors. Patrons and mentors are also involved in providing support to learners. Tutor's role and selection requirements are subject of a specific internal regulation. Course students are divided in virtual classes, each up to 60 students (1st cycle) or 20 (2nd and 3rd cycles). The MVP determines that teachers should be responsible for at least one of those virtual classes. The remaining are distributed by a team of tutors, each of them in charge of assisting and collaborating with the coordinating teacher to support its respective students (Pereira et al., 2008, p. 23)

Tutors have the following role and functions:

· Follow up the work developed by the students in the virtual class, according to the guidelines defined by the teacher in charge of the curricular unit and expressed in the Tutoring Plan;

· Clarify doubts about the technical aspects related to the use of the e-learning platform;

· Correct and classify continuous evaluation assignments and exams, according to the guidelines and criteria expressed in the Tutoring Plan;

· Keep the teacher in charge informed about the development of the activities, in particular by reporting any anomalies

***Patron / Mentor***

This role is described by the MVP as follows: “The function of the patron has another important facet: guidance and counseling more focused on affective and social aspects, as an element of individualized support to the development of the student’s personal learning project From this point of view, the existence of the patron opens the door to the establishment of privileged affective relationships of an informal kind, based on mutual respect. It is also a way of assisting students in their adaptation to virtuality and to the methodology of distance education, defined by the pedagogical model; and of encouraging them to be active and motivated, capable of overcoming difficulties that might impair learning. A student support network based on peer interaction, i.e. a community, is thus brought to life. After the network of patrons has been set, each patron will be tied to a virtual class, accompanying its students throughout the school year or, when feasible, throughout their whole academic path.”(Pereira et al., 2008, p. 27)

***Course secretary***

A member of the department's administrative staff is in charge of providing support to students in administrative issues.

**Course teacher coordination team**

Teachers can work alone or in teams providing support in pedagogical and scientific issues.

USGM:

* (in earlier chapters)

Throughout the delivery of the courses two kinds of Tutors constantly support learners: Didactic tutors, more focused on giving assistance on course contents, and Technical tutors, who take care of the technical supports of the learning path.

### **3.5. Protocol of course assessment**

**How do you evaluate the course: Is there a systematic institutional process / protocol? Are students involved at this stage?**

UTU:

Course feedback is gathered in different ways in the departments and faculties. It can be gathered spontaneously, as a discussion between the students and the teacher during the course, with a feedback form at the end of the course or as an electronic survey by utilizing electronic tools such as Moodle or Webropol. At its best, the feedback can be used immediately to improve the realization of the course.

University Teaching and Learning Council, where students have their representatives, has prepared general course assessment questions for faculties. These can be used in faculties or they can use questions of their own (Evaluation scale: Completely disagree 1 2 3 4 Completely agree):

1. The learning outcomes of the course were clear to me.

2. I feel that I have reached the general goals of the course.

3. The used teaching methods enhanced learning.

4. I was actively committed to learning during the course.

5. I was appreciated as a student.

Additional questions for use:

6. The course deepened my previous know-how

7. The course advanced applying theoretical knowledge to practical know-how

8. The teachers helped me to comprehensively understand the issues to be studied during the course

9. The course supported my development for my future work

UAb:

Yes. The process is described in the Quality Manual. At degree level, self-evaluation is carried out by the course coordinator. He's responsible for the preparation of a Course Self-Evaluation Report (RAC), which should be based on the reports of the various CUs and other elements. It should include an analysis on the fundamental aspects related to teachers and students performance and overall success of the degree. The structure of the RAC is defined in the Rector's office. This report is subject to review by the Committee for the Follow up and Improvement of the Study Cycles (CAM). It's up for the Quality Evaluation Council (CAQ) to issue a recommendation on the aspects it considers relevant.Students are involved as student surveys are a major part of the evaluation process.

USGM:

In USGM courses are constantly evaluated by different figures in different moments thus ensuring a complete evaluation from different point of views. The figures in charge for this evaluation are, first of all, the students, then we have: stakeholders, professors, dean of the school and, finally, we have a periodic evaluation done by an independent agency that make this job for the Italian ministry.

Starting from students, when they reach the 2/3 of the activities foreseen in the course, they evaluate the course itself by filling a questionnaire. This evaluation is compulsory to access the final exam. Then, just before the Final Dissertation, students are asked to evaluate through a different questionnaire all the courses and, finally, 2 or 3 years after the Dissertation they answer to some questions made via phone call by USGM Placement Office staff on the whole learning experience at Marconi university.

Following the ANVUR (Italian National Agency For The Evaluation Of Universities And Research Institutes) indications, all the results and comments obtained through these evaluations are shared firstly with the Professors of the single courses, with the Dean of Faculty, the Coordinator of the courses and the Evaluation Unit. Afterwards, the analytical results are published, making them available to everyone.

Also thanks to the results of the evaluations made by the students, the courses are annually revised internally through the Annual Unique Statements (SUA CdS - Scheda unica annuale del corso di studio). This statement is like an i.d. card of the course, which is firstly created when the course has been activated and then annually revised. The information contained in them are mainly related to:

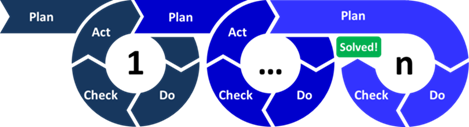
1. Aims and objectives of the course

2. Students’ experiences regarding the training path description, the learning evaluation methods, the educational articulation, the scheduling of the activities, examination timetables, teaching staff, infrastructures, tutoring

3. Results of the training paths (data about the numbers of students starting the course, during the course and completing the course – feedbacks by the external organisations hosting stages and internships for Marconi University students)

4. University Organizational Structure, Courses organizational structure, Plannig deadlines, Annual Monitoring and Revision of the objectives

Throughout the 3 stages of planning, realization and evaluation of the courses, USGM follows and applies the Plan-Do-Check-Act Cycle (PDCA[1]) approach. It is an iterative four-step management method based on the principle of continuous revision of the organization through steady data collection and subsequent measures to improve.



Multiple iterations of the PDCA cycle are repeated until the problem is solved.

USGM refers to the University Quality Assurance framework designed by the University Quality Presidium, that defines roles, processes and functions finalized to assure quality.

The University Bodies involved in the Quality Assurance procedures are: the Evaluation Unit, the University Quality Presidium, the General Directorate, the Governance Bodies, The Faculties, the Departments and the Joint Committee Professors-Students.

Governance Bodies: the Governance Bodies are the Rector, the Boards of Directors, the Academic Senate and the Administrative Director. Their tasks are to define the Quality Assurance policy and its objectives, and to guarantee its execution and periodical revision. They have decision-making power regarding:

· The redefinition of the quality management system

· The actions related to the QA policy and objectives

· Improvement actions

Evaluation Unit: The Evaluation Unit monitors and evaluates the flows of information within the University at all levels. Unlike the Presidium, which is composed entirely by internal members, the Unit is constituted mostly by external members, belonging to other Universities, Research Centres and companies. The Unit’s functions are: 1. checking the educational offer quality and efficiency also based on the indicators identified by the Joint Committee Professors-Students; 2. verification of the Research activities carried out by the different Departments; 3. Verification of the consistency of the scientific and professional curriculum of the teaching contract-holders. Regarding the accreditation procedures for the Premises and the Courses, the Evaluation Unit performs the following tasks:

a) It expresses to the University a binding opinion on the possession of the requirements for initial accreditation for the purpose of establishing new courses of study.

b) It verifies the correct functioning of the QA system and it provides support to the ANVUR and to the Ministry of the Education and Research (MIUR) in the monitoring of compliance with the requirements of initial and periodical accreditation of the university courses and the premises

c) Provides support to the Governance Bodies and to ANVUR in the monitoring of the results reached in terms of the indicators for the periodical evaluation; it gives support in the elaboration of further indicators to be applied in order to reach the objectives stated in the University strategic planning, also based on the indicators identified by the Joint Committee Professors-Students.

d) Once every five years it evaluates the functioning of the courses and of the departments through the analysis of the results and, when necessary, it relies on auditions.

e) It verifies the executions of the Recommendations and of the Conditions formulated by the External Evaluation Commissions; in case of critical elements it can demand for an anticipated Cyclical Review Report.

f) It draws up an Annual Evaluation Report following the ANVUR guidelines

g) It draws up an Annual Report to be sent to ANVUR

University Quality Presidium: it is an operative structure accomplishing tasks that are conferred by the Governance Bodies according to the ANVUR documents and the Ministerial decisions. The Quality Presidium performs the duties of following up, supporting and implementation of the QA framework. Moreover, it promotes a culture based on quality, it carries out planning activities, surveillance and monitoring of QA processes, it enhances continuous improvements and supports the Faculties and the Departments in the management and implementation of the QA policy and processes within didactics and research sectors. The University Quality Presidium has a pivotal role in the University QA through:

a) The supervision of the appropriate and harmonized performing of the QA procedures

b) The proposal of common tools for QA and also of training activities for the application of these tools

c) The support to the Professors, and the Directors of the Departments for the activities they have in common

Moreover, the Presidium:

· Organizes and verifies the drafting of the Annual Unique Statements;

· Organizes and verifies the Annual Monitoring and the revision of the courses

· Assures the information exchange between the Evaluation Unit and the ANVUR, it collects data for the monitoring of the quality indicators, both qualitative and quantitative, and takes care of the results’ sharing.

· Monitors the implementation of the measures taken after ANVUR recommendations

Faculties: Being the point of reference for the courses, the faculties have full responsibility for the educational activities carried on within the single faculties. They are in charge of the educational path planning, they approve the Annual Unique Statements and the courses’ revision reports even on the basis of the Quality Presidium and the Joint Committee Professors-Students comments. The Faculties:

· Define the strategies for educational activities planning

· Establishes roles and responsibilities in their own organization

· Are responsible for the courses planning and execution

· Approve the courses’ revision reports

Joint Committee Professors-Students: This Committee is like a permanent observatory of the educational activities. It carries out educational offer and didactic quality monitoring activities and it monitors also the services provided to the students by the professors and the researchers. It identifies the indicators for the results of the monitoring activities and it gives its opinion on the activation of a new course and on the abolition of one, both at Bachelor and Master level. The Committee also evaluates:

· If the course plan reflects the competences and knowledge requested by the labour market

· If the professors’ educational activities, the methods for transferring knowledge and skills, the teaching material, the laboratories, the equipment are effective for reaching the learning objectives at the desired level

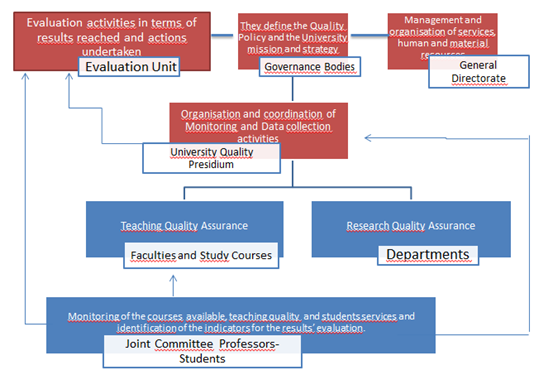
· If the examination methods allow to verify the results obtained in relation to the learning results expected

· If after the Annual Review of the courses, effective corrective actions are implemented

· If the satisfaction questionnaires for the students are efficiently managed, analysed and then used

The Committee expresses it evaluations and formulates proposals for the Annual Review improvements, which is transmitted to the Quality Presidium and the Evaluation Unit. The Committee of each Faculty is composed by a Professor and a Student and they meet at least twice per academic year.

Moreover at the end of 2017 a Committee for the planning of teachers’ and tutors’ training on TEL QA procedures and standards has been established. This Committee is called COPIFAD and its members are appointed for two years.



USGM Quality Assurance organizational structure

[1] Tague, Nancy R. (2005) [1995]. "Plan–Do–Study–Act cycle". The quality toolbox (2nd ed.). Milwaukee: ASQ Quality Press ([www.asq.org/quality-resources/pdca-cycle](http://www.asq.org/quality-resources/pdca-cycle)).

**How is evaluation performed after the course is taught/delivered?**

UTU

In some faculties the students will have the questionnaire automatically, while in some faculties the teachers are collecting the feedback by themselves.

UAb:

Programmes are evaluated at the end of each semester, and at the end of each academic year. The evaluation is carried out by the course coordination. The annual evaluation involves producing a report that focus on a set of standard items(an online template for this report is provided by the quality assurance office). The evaluation is based on the information collected in the institutional student surveys, and also on the analysis of data collected by the administrative services.

USGM: see earlier

**How is data collected?**

UTU:

UTU has licence forWebropol software. In some faculties the data is collected centrally by the faculty, in some faculties teachers are collecting the feedback by using Webropol or some other software (e.g. Moodle).

**UAb:**

Learning analytics is collected in Moodle and in other UAb databases. Student input is retrieved from online surveys which are also submitted in the virtual learning environment.

**USGM: see earlier**

**Do students give feedback on teaching? If, please describe how.**

UTU

There is a strong emphasis on the meaning of student feedback as a one important tools for educational development in UTU. The process is described above.

UAb:

Yes, items on teaching practices and teacher's performance are included in student surveys.

UAb:

Yes, items on teaching practices and teacher's performance are included in student surveys.

**USGM: see earlier**

**Who is informed about the evaluation?**

UTU

The teacher, who is responsible the course, is always informed. In some faculties also the Faculty Council of Educational Development and Curriculum Board is informed. The teacher can also inform his/her foreman. In general level (no names mentioned) the results are told in some cases also in the education development seminars of the faculty.

UAb:

The whole UAb community and its stakeholders, as well as the general public – the results of the surveys are made available at the UAb portal/website -<https://portal.uab.pt/qualidade/inqueritos/?doing_wp_cron=1645098267.0254259109497070312500>

The data collected internally, and stored in institutional databases, is made available to the Rector and its team, and/or the departments’ directors who share the results with the course coordinators; in addition, the course coordinators share them with the teachers.

USGM: see earlier

**What measures can be taken for improvement?**

UTU:

The results of the evaluations are often discussed in yearly developmental discussions between a teacher and his/her foreman. Some measures can be suggested and invented in these discussions. In general level some measures can be taken in yearly faculty seminars and in faculty education development and curriculum board.

**UAb:**

The results of the evaluations are discussed in plenary meetings of the department, and in meetings between the course coordination team and all the programme teaching staff. Whenever needed, concrete measures for improvement are proposed and analyzed in such meetings, based on the following input:

· Course analytical reports;

· Student surveys results;

· Quality assurance agency external evaluation reports and recommendations, which are binding.

USGM: see earlier

### **3.6. Identification of TEL /online quality practices or patterns of quality**

**Is your Institution using Quality standards/frameworks for TEL/online?**

UTU

No.

**UAb:**

Yes. Both from an internal and external nature, as well as at pedagogical and technical levels.

**USGM**

The procedure for adopting new technologies to ensure courses’ quality is the same used for the production of multimedia lab. The proponent sends a communication to the Multimedia Production Office indicating: the present situation, the needs registered, the solution to be adopted and the aimed results. Then dedicated meetings are organized to discuss every aspect before integrating (in case) the new solution or technology.

**If no, what are the reasons?**

UTU:

TEL/online teaching is *“business as usual”* and it´s planned, implemented and evaluated according the same standards and procedures as other forms of teaching.

**UAb: N/A**

**USGM: see earlier**

**Are you planning to use one in the future?**

UTU:

Not at the moment.

**UAb:**

Not at the moment, to our knowledge.

**USGM: see earlier**

**If yes, which are they?**

**UTU: -**

**UAb: N/A**

**USGM: see earlier**

At external level (MPV and Quality Manual). At external level (Distance Education legal framework, Quality Assurance Agency guidelines, E-excellence benchmarking and other quality labels checklists)

**Does your Institution collect data in order to evaluate TEL/online programs?**

UTU:

Yes, data is collected. It is the same kind of data as it is in others forms of teaching.

UAb: Yes.

USGM: see earlier

**Is there a strategy on the use and purpose of learning analytics within the institution?**

UTU:

Yes, university has launched the “Learning analytics policy of the University of Turku.” Learning analytics is also mentioned in UTU´s policy programme as one action: *“Applying versatile methods in the evaluation of student competence by e.g. utilising learning analytics*”. There is “The Centre for Learning Analytics” in the University of Turku. University has been active both in national (such as AnalyticsAI, <https://analytiikkaaly.fi/en/>) and international (such as Erasmus+ Project ENVISION 2027/Output 5: Supporting Virtual Labs and Teamwork with Learning Analytics) development activities.

**UAb:**

Some approaches are being tested, but there is not yet a specific institutional policy for LA.

**USGM: see earlier**

**Does your institution consider ethical norms and government policy with respect to data protection and the privacy of students?**

UTU:

Yes. Data protection goes hand in hand with ethical norms and in the future this will be one important development area. Data management and research ethics are also mentioned together in policy programme as a study opportunity for students.

UAb:

Yes. Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and Directive 95/46/EC (General Data Protection Regulation); at the national level, the norms of the National Data Protection Commission = *Comissão Nacional de Proteção de Dados* (CNPD)- Portugal

USGM: (maybe in previous chapter)

### **3.7. Process of continuous improving of educational provision**

**Are TEL/online programs reviewed, updated, and improved and how?**

UTU:

TEL/online teaching is “business as usual”: it´s evaluated with the same procedures as traditional teaching.

UAb:

As part of the regular self-evaluation of degrees, complying with the indications set in the UAb’s Manual of Quality, and by the national accreditation agency for HE (A3ES).

USGM

The principal process used in this case is the one developed and implemented within a dedicated self-assessment tool used for every subject at USGM. This tool includes a special database in which every activity and result is recorded. The analysis of the result permits to the teacher to follow directly every student, to the student to self-assess his knowledge before final exam and to internal committee and professor to evaluate the quality of the learning objects of the course. This process is described in this reference:<https://www.researchgate.net/publication/312187657_Martini_M_Fontana_F_2015_A_technological_enhanced_self-assessment_activity_to_reduce_university_drop-out_FORMAMENTE_vol_20153-4_ISSN_1970-7118>

**Are there any Institutional policies, structures, processes, and resources in place to guarantee the successful teaching and learning process of students with special educational needs?**

UTU:

Yes, The University of Turku ​has been advancing availability since 2001 by developing equal study opportunities for different students. The Accessibility Planning Officer advises students and personnel in different questions dealing with accessibility and availability.

​According to the University's strategy, the University emphasises involvement and communality in its actions. Every member of the University community has the chance to take part in the University's activities and develop their abilities and know-how. Involvement also means that the needs of every student should be taken into account when planning and developing curricula and teaching methods, in order to ensure availability.

In the University of Turku Regulation on Studies, it is noted that students with disabilities and learning difficulties have to be provided with as much accessibility as the students require, in order for them to be able to take an exam or complete a course. The mode of studying and the exam duration must be adjusted according to the required accessibility as well as the personal conditions of students with disabilities and learning difficulties.

**Accessibility** means easy access to physical environment and buildings. It means that there are no obstacles that might make moving or other functions difficult, or reflections that might make it difficult to see.

**Availability**of studying and teaching mean, for instance, that students have a possibility to get study material in a suitable format, e.g. in electrical format or large print. It could also mean organising the study place or situation so that it is suitable for a student with a wheelchair or dyslexia.

The student can receive a recommendation of special study arrangements due to disability, illness, dyslexia, or learning difficulties. Such arrangements can include extra time or using a computer in exams. The Accessibility Planning Officer, in co-operation with the faculty's Head of Academic and Student Affairs, makes the recommendation based on a conversation with the student. The recommendation can only be given once the student has presented a medical certificate or other expert opinion to the Accessibility Planning Officer.

Accessibility of the University and availability of studies are regulated indirectly with following laws and instructions: The Finnish Building Regulation FI/Barrier-free Building; The Non-discrimination Act: especially section 6 which concerns the responsibility of the education provider to advance equality; UN's Convention on the Rights of Persons with Disabilities: especially article 24 which concerns for example the availability of study material.

UAb:

Yes, the Student Regulation with Special Educational Needs of Universidade Aberta. Moreover, the initiative of the Vice-Rector for Teaching, Training and Academic Organization - The admission to the UAb students with special educational needs (NEE Students) justified in the past the creation of the "Accessibility Project", which has allowed the monitoring of life academic performance of these students and promote their inclusion in the UAb. It is now necessary to adopt appropriate measures and practices from a regulatory point of view that can contribute to equal opportunities and to their full social and academic integration. Thus, the Working Group - SEN is created with a view to preparing regulatory instruments that define general guidelines and concrete guidelines regarding the support to be provided to students with special educational needs, permanent or temporary, who attend or will attend the UAb.

On the other hand, the Vice-Rector for Innovation and Quality has set a Plan for the Digital Strengthening of Assessment, to respond to the need to reflect on the existing conditions for students with special educational needs and/or with difficulty in accessing the Internet.

USGM:

Concerning SEND (students with special educational needs) students, for every course we always ensure the presence of lecture notes together with video lesson. Moreover, in every multimedia lab developed into Marconi university, we always offer the possibility to read on screen the eventual dialogues present. This policy ensures the use of this material to deaf students.

A different category of SEND is constituted by worker-students. In this case we offer the possibility to have a half enrollment at courses paying half taxes and acquiring half credits.

**Is there an institutional policy and code of practice to ensure academic integrity and freedom and ethical behavior?**

UTU:

Yes, there is are “Guidelines for Misconduct and Fraud” including ethical rules. The University of Turku is committed to follow the guidelines of good scientific practice and procedures for handling misconduct and fraud in science, compiled by the Finnish Advisory Board on Research Ethics. The directions can be found on the website of the organization ([www.tenk.fi](http://www.tenk.fi/en/index.html)). University has also “Good practice of Studying” and description of fraud (“deliberate and dishonest acts that aim at presenting a false image of own or other person’s competence”) and it´s manifestations.

UAb:

Yes. UAb has an institutional policy on this subject and the Student Disciplinary Regulation (Regulamento Disciplinar dos Estudantes da Universidade Aberta) is the specific code of practice that regulates academic integrity, freedom and ethical behaviour. There is also an ethics committee that evaluates UAb's processes and operations as well as a research and innovation ethics committee. At departmental level there are additional codes of practice with clauses on academic integrity and ethical behaviour.

USGM:

All these aspects are reported into the Faculty Handbook that is signed by every lecturer, teacher and professor before starting his activity at USGM. In the Faculty Handbook is stated that Academic Freedom is fully supported : “Instructors teach students within assigned courses and accurately track all submissions and grades within those assigned courses. They are responsible for utilizing the curriculum which will be provided and approved by the Academic Department; we fully support our Faculty to have Academic Freedom” .

Also for what concerns the policy and code of conduct, the reference is the Faculty Handbook. Concerning the electronic security, we are using a closed architecture with a custom LMS. Moreover, it is important to consider that in Italy, even for TEL courses, the exam is in presence, never online.

**Are there any electronic security measures set by your institution’s policy/code of practice?**

Yes there are: University is using electronic plagiarism detection. There is a detailed process description of suspected plagiarism and a procedure in case of misconduct or fraud including chapters on:

* Student’s Legal Protection
* Progress
* Compiling and Restoring Documents
* Announcements to the Partner University

### **3.8. Professional development of teachers and instructional designers**

**In faculty level, do people involved in designing/ developing/ evaluating TEL/online programs have specific expertise in academic and technical aspects and which?**

UTU:

This varies. In some faculties there are (part-time) designers. In most cases teachers are the key persons to design/develop/evaluate courses and programmes. Some of the designers (and teachers, more below, when there is a question regarding teachers) who have taken part in the national TieVie training in 2001-2006 (Peurasaari 2008) or attended other courses and seminars. In most cases designers have practical “hands on” expertise after utilizing TEL for years.

UAb:

Yes. Online programmes are designed, developed and evaluated by teaching staff with the support of support teams specialized in learning design and in technology. All teacher staff has received advanced training in the use of media technology for academic purposes and most conduct regular research and innovation activities in the field

USGM

Yes. There are two different figures involved in TEL contents design and realization. The first is the instructional designer. We use specific people for every school and they are technological experts with knowledge also of the didactical program. The second figure involved in this process is the professor. During the selection, USGM considers as added value the experience in preparation and delivery of online contents. Moreover, we have a continuous training prepared by a dedicated commission.

The USGM teaching staff is always familiar with the advantages/disadvantages of using TEL in particular course contexts, this issue is tackled in the training program specifically prepared for the professors.

**Is the teaching staff involved in designing/ developing/ evaluating educational programs familiar with the advantages/disadvantages of using TEL/online in particular course contexts?**

Staff is familiar with some aspects of TEL, such as TEL as a way to deliver materials, to keep lectures and to record and re-use recorded lectures. TEL as a way of collaborative learning (eg. peer-feedback) and other new possibilities of TEL are known by some teachers, but not yet widely used, such as learning analytics, gamification, early recognition and support of low achieving students and automatization of assessment.

UAb: Yes (ja muissa myös)

**Is the teaching staff trained and proficient in the use of learning technologies and (e-) assessment methods?**

This varies. In some faculties there are teachers, who have taken part in the national TieVie training in 2001-2006 (Peurasaari 2008) or attended other courses and seminars. Many teachers have practical “hands on” expertise after utilizing TEL for years. In some cases especially during “emergency online teaching” caused by Covid 19 teachers have not been prepared to use TEL in large scale.

**Are there any particular training activities for new staff?**

University is organizing seminars on different topics on regular basis. They are open for all teachers.

**Has the institution developed procedures to identify the support requirements of the teaching staff?**

There is yearly a systematic training needs questionnaire by the university personnel development unit. Also “IT Services Unit” is collecting ideas and training needs regularly. Information that is gathered in different ways, is a part of ongoing dialogue between the providers of support services and the users of services (“clients”). IT Services in UTU has an “IT Partner Group Scheme” as a way to facilitate customer-centric IT service development and to get user feedback and information of current needs and development ideas. As a part of this scheme/system IT Services has appointed an IT Partner for each faculty and other bigger unit. IT partners meet with faculty/other unit representatives regularly (3-4 times/year) to discuss recent changes and improvements in university IT Services, to get feedback and spark up ideas for service development.

**What workshops are available for your teachers to attend? (for example: professional development, enhancement of faculty competence in skills, enhancement of faculty competence in pedagogy and enhancement of faculty competence in TEL)**

UTU:

Autumn 2021 the following workshops and seminars are available:

* Lecture hall technology as a support in hybrid teaching (45 minute “clinic” for questions and answers)
* Lecture hall technology in face-to-face teaching (90 minutes)
* Designing online teaching (Workshop: Moodle activities and discussions, presenting a self-made course plan in a seminar including feedback from experts)
* Editing and subtitling with Screencast-O-Matic (45 minutes)
* Tips for making videos (90 min webinar following after 2 weeks with 4 hours workshop)
* Tips for podcasts (60 min webinar, activities in Moodle, 3 hours workshop)
* Electronic assessment (2 hour practical workshop where an exam is designed)
* Students making videos (60 minutes webinar including examples of videos made by the students)

In addition to these workshops and seminars UTU organises organizes systematic pedagogical training for teaching staff. There are courses (“university pedagogical studies”) from 1 ECTS course up to 60 ECTS course (with will last 3.5 years part-time studying). The courses were in the beginning offered in cooperation by the university central administration and the Faculty of Education. Now they are organised by the Faculty of Education. (These trainings are mentioned also in “5.1. Staff professionalization”.)

UAb:

Several workshops and seminars are available, as highlighted in the news section of the UAb portal; there is also training provided by the UAb Library Services. In addition to these workshops and seminars, internal training is provided to the teaching staff by the institution.

## **Chapter 4. Industry relevance**

### **4.1. Policy and action plan for industry-relevance**

University-industry collaboration takes place on multiple levels. The Ministry of Education (or similar) is responsible for National educational policies, which in turn reflect more closely the view of the Educational Policies of the European Commission.

On the University level there is usually a Board (the names vary between countries), which makes the strategic decisions for a particular University. Generally, there are external members in the Board to make sure that there is industry relevance available in the University strategy. University-industry collaboration has many shapes and forms. Consequently, different Universities have different traditions, regional differences etc. and it has a role when the University selects external Board Members. By this we mean that if the University is located in an industrial region there usually are Board Members from the most important industry. We believe that there are more external Board Members from the STEM sectors (and industries). However, the particular University decides and nominates the Board Members. University strategies are usually made for 4 years at a time.

University-Industry collaboration can be found on departmental level as well (based on the University strategy). The intensity of using industry as a sounding board when developing various curricula varies. Again, departments will make their strategies based on the University strategy in question.

In the Departments, there are usually a number of Units (names vary between countries and Universities). Usually, the previously mentioned planning cycle (University strategy - Department strategy - Unit strategy) continues. Thus, Units collaborate in planning their programmes with needed external organisations when they plan for their particular programmes.

Individual programmes might have their own industrial partners on strategy as well programme level. Usually Programmes use local industrial partners for there are mutual benefits to be gained in collaboration (practicality for students and skilled labour for the industrial partners). There are potential R&D and research collaborations as well if joint benefits are met.

On personal levels collaboration has many shapes and forms. Personal contacts are important in developing joint activities with industry. Another example of this personal level cooperation is hiring people from the industry to run individual courses or just lectures. Another example is hiring professors of practice for a number of years. Professor of practice can be used as a lecturer in many Programmes and lecturers. University can use needed industrial persons for lecturing, career guidance etc. There are a number of examples in various EU-based Universities.

**Ways to consider industry needs when developing the learning model and the curricula design**

UTU

In UTU, part of the Board are people from outside the University. Qualified people are recruited for those positions with a view of the University's strategy. Thus, industry involvement is inherited to the activities of the university.

Additionally, the university system in Finland introduced a position of professor of practice in the system. Professors of practice are industry expert who lecture and do research in their own fields. Thus, bringing in the practical world for the students.

Various Departments have their own ways of collaborating with the industry. It can be based on organisational or personal ties. Many of the Departments in the science field are closely collaborating with the industry, locally, nationally, and internationally.

A newly formed Faculty of Technology has numerous professor chairs based on external funding. Thus, expressing the interest of the industry for future collaboration.

Students are involved in many projects (thesis etc.) with the industry. The industry holds many recruiting activities etc. on campus during the study year. Therefore, the industry presence is a normal activity in the university.

UAb

At the UAb, university-industry collaboration is an important strategic goal. This is translated in the fact that one third of the members of the General Council are invited high profile personalities coming from different sectors of society, namely the business community. Departments have their own ways of collaborating with the industry and promoting knowledge and innovation transfer. These are based both on formal agreements with organisations, institutions and companies as well as on personal informal ties and connections. The Sciences and Technology Department specifically collaborates with local, national and international companies. Students can be involved in R&D projects (usually in the framework of their PhD research) with the industry/companies.

Fostering the scientific, technical and cultural exchanges with similar national and international institutions is a goal of utmost importance at UAb. Over the years, UAb has established hundreds of protocols and partnerships with national and foreign institutions with special focus on research and development activities, especially in the area of distance education and eLearning.

Worldwide, UAb is present in different international networks in Europe, Africa, America and Asia. It covers mostly the Portuguese-speaking area, including Macau. Within the European space, it promotes mobility within the framework of the Erasmus+ Program and participates in different R&D projects. UAb is also a founding member of the largest European network in digital education, the European Distance and eLearning Network (EDEN), apart being a member of the European Association of Distance Teaching Universities (EADTU) since its creation. Within the Portuguese-speaking space, UAb is a member of the Association of Portuguese-language Universities and of the Lusophone Network for Distance Education by hosting one of its Distance Education Centre – CE@D.

It should be noted the list of protocols and partnerships established with higher education institutions and companies as well as the activities carried out in East Timor (training of teachers, educational agents and officials of the Timorese public administration). In Asia, UAb was a founding member of the International Asia Open University, offering degree programs and post-graduate degrees in Chinese, English and Portuguese.

The University has developed a network of small units called Local learning Centres that promote lifelong learning local initiatives. Currently there are 18 Local Learning Centres in Portugal (mainland and islands).

**Industry and other stakeholder involvement in the curriculum process (e.g. ways to consider specific needs for STEM education when transferring courses to technology enhanced learning or online learning)**

European Universities are more or less on the same level when it comes to TEL activities, and the pandemic made the ones behind to take a big leap to develop their University. Same e-learning tools are used. In the EU, by and large, Universities have the technology to further develop their TEL methods.

Individual lecturer selects the tools, which will be used in his/her courses. The same tools are available for everybody at the University, be that lecturer or student. Universities tend to select to their toolbox generally used (and hopefully free of charge) software such as Moodle, Zoom, Teams etc. Similar methods can be used to bring industry collaboration to the classroom, ie. to engage external experts online. Or use similar tools to assist industrial partners without travel costs and make distance irrelevant.

UTU:

At the UTU, there are all the technological etc. facilities and technologies that exist available for the students. The University organises all kinds of courses for e-learning/teaching activities. Most of the teaching staff are familiar with modern e-learning tools etc. Lots of the courses at the university are being taught online. That was the situation pre-Covid-19 era and developed rapidly since the epidemic.

Individual courses are designed by the individual lecturer. However, there are guidelines within the Departments. The technology used is the same in the University (Moodle, Zoom etc.).

UAb:

The [Lifelong Learning Unit of the Universidade Aberta](https://portal.uab.pt/alv/) develops [professional training courses](https://portal.uab.pt/alv/programasalv/formacao-profissional/), and [post-graduation programs](https://portal.uab.pt/alv/programasalv/pos-graduacoes/), in different scientific areas, delivered in eLearning and targeted to respond to working life and/or industry specific needs.

UAb's strategic plan states: “UAb is dedicated, by its mission, to play a relevant role in meeting the targets set by the European Union and Portugal with a view to achieving the Europe 2020 strategy, in particular by contributing to higher training and qualification, both 1st, 2nd and 3rd cycles, as well as in the broad scope of lifelong training, creating conditions for the modernisation of labour markets, with a view to increasing employment rates.” (UAb Strategic Plan, 2020, p. 4)

### **4.2. Infrastructure**

***Alignment of the technical infrastructure with the teaching methodology, learning activities, and e-assessment methods***

UTU:

YES, To add flexibility and increased possibilities for planning the studies, electronic exams are used. Students can take the exam at the most suitable time for him-/herself. The Electronic Examination Service of the University of Turku offers the possibility to take book (literature) and course exams as well as maturity tests as e-exams in exam rooms which have video surveillance (audio and video recording). In the campus in Turku students can take the electronic exam with Exam-system in several buildings (48 computers) and at distance campuses at Pori (4 computers), at Rauma (4 computers) and at Vaasa (1 computer).

E-exams offer students more flexibility. The software enables students to write exams at a faster pace and at more flexible times, which makes scheduling of the exams with lectures, other exams and work easier. The process requires that the examiner has created the exam and questions in the electronic exam system. Counselling Services at the University of Turku are responsible for the video surveillance.

UAb:

The [Lifelong Learning Unit of the Universidade Aberta](https://portal.uab.pt/alv/) develops [professional training courses](https://portal.uab.pt/alv/programasalv/formacao-profissional/), and [post-graduation programs](https://portal.uab.pt/alv/programasalv/pos-graduacoes/), in different scientific areas, delivered in eLearning and targeted to respond to working life and/or industry specific needs.

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**Does the mentioned infrastructure and used online tools support student active learning and collaboration?**

UTU:

Yes,it does to a certain extent. Of course there is variation in a big university and there are differences between the teachers.

UAb:

Yes. Indeed, active learning and collaboration are central to the MPV.

### **4.3. Assessment of learning**

***UTU***

***Are (e-) assessment methods fit for purpose, allowing students to demonstrate the extent to which the intended learning outcomes have been achieved?***

*Yes.* According to instructions (Source: Vice-Rectors Curricula Letter 2022-2024, University of Turku Intranet) for teaching, assessment must be aligned with the intended learning outcomes. Use of multiple forms of assessment methods is encouraged. It is stated that the feedback given to the student is important in the assessment process. A mere grade gives the student quite an unclear perception of what should be improved in his or her performance.

In addition to the substance of the studies, the student may also be given feedback on other issues. Especially at the beginning of the studies, it is important to give feedback also on matters related to learning skills. The Teaching and Learning Council of the University has decided that at least one course on the first autumn includes a feedback event, in which the student gets deeper feedback than only a grade on his or her performance. The aim is to help the student to understand what learning will be evaluated and how, what a good answer is like in exams and in other assignments and how to prepare for exams.

UAb: Yes.

**How are they designed?**

UTU:

The way of evaluation (e.g. a report, an essay, exam) is included in the curricula. However, the individual teacher has autonomy to decide about the content of the evaluation. The intended learning outcomes which are in the curricula should guide the evaluation.

UAb:

The e-assessment methodology is based on the production by students of a number of evidences of learning outcomes achievement. The students may choose between a continuous assessment mode, which implies producing no less than 3 papers, and a final exam. Several e-assessment tools are used from portfolios to learning analytics. The e-assessment methodology is based on evidence-based research produced by LE@D and is validated by the Scientific Council.

The Learning Card (CAP) which is based on the “credit card” metaphor is a credit accumulation points system working as a kind of currency representing the results of learning performance assessment. It aims to value the student’s personal learning process. It is a personalised device that aggregates the results of what the student produced throughout the learning process in an organised and systematic assessment registration tool.

### **4.4. Functionalities of the technical infrastructure**

**Does the virtual learning environment, VLE (if any) support specific pedagogical methods and tools?**

UTU:

The most common VLE in UTU is Moodle which has many tools and activities. It is up to the individual teacher and his/her skills and knowledge of pedagogy and tools how Moodle and its different elements are used.

UAb:

Yes. Moodle was chosen based on the compliance of its features with the principles of the virtual pedagogic model (MPV).

PASI

VLEs are quite commonly used. There should be incentives for individual lecturers to try to develop new VLEs that the lecturer has not previously tested. Combining various tools and technologies should be used. However, it is up to the content and the learning objectives of the course.

PASI

**Is the VLE based on non-proprietary web standards and is it updated to reflect technological changes? How often?**

UTU:

Moodle supports open standards, and is interoperable by design to enable integration of external applications. UTU takes the next version of Moodle in use regularly.

UAb:

Yes. Moodle supports open standards, and is interoperable by design to enable integration of external applications. UAb takes the next version of Moodle in use regularly.

PASI

Moodle supports open standards and it is interoperable by design to enable integration of external applications. New Moodle versions are used when available.

PASI

**Does the technical infrastructure ensure the accessibility of the TEL/online programme by students with special educational needs and how?**

UTU:

Students with special educational needs are taken into account (see 3.7.). When it comes to Moodle, at the moment it partially meets the Level AA accessibility requirements. Some requirements fall under undue hardship as they require code alterations in Moodle core. These suggestions for alterations will be sent to Moodle for review. There is also a timetable for other development measures so that UTU Moodle would be more accessible.

UAb:

Yes. The technical infrastructure applies the Accessibility Guidelines for Web Content (WCAG 2.0 criteria; standard EN 301 549). In addition, there are Guidelines for Creating Accessible Documents and templates provided.

PASI

Students with special educational needs are taken into account (see 3.7.). When it comes to Moodle, at the moment it partially meets the Level AA accessibility requirements. Some requirements fall under undue hardship as they require code alterations in Moodle core. These suggestions for alterations will be sent to Moodle for review. There is also a timetable for other development measures so that UTU Moodle would be more accessible.

The technical infrastructure applies the Accessibility Guidelines for Web Content (WCAG 2.0 criteria; standard EN 301 549). In addition, there are Guidelines for Creating Accessible Documents and templates provided.

### **4.5. Use of virtual and remote laboratories**

**Does the institution provide students with an e-library?**

UTU:

Yes.

UAb:

Yes. Students have access to an eLibrary (<https://catalogo.biblioteca.uab.pt/>), as well as an institutional open access repository, as well as an institutional open access repository (<https://repositorioaberto.uab.pt/>)

**Does the institution have virtual labs?**

**UTU**

Institute of Biomedicine has a licence to use Labster virtual laboratory ([www.labster.com/](http://www.labster.com/)) in their teaching since May 2021. Labster is the world´s leading provider of virtual science labs (over 200 simulations).

Institute of Biomedicine has also used virtual microscopy in teaching over ten years. The institute has a licence for Aiforia, which is a cloud-based solution for virtual microscopy and image analysis ([www.aiforia.com](http://www.aiforia.com)).

University of Turku / Biomedicine is a partner in Erasmus+ Project ENVISION 2027 which deals with virtual labs (Output 5: Supporting Virtual Labs and Teamwork with Learning Analytics).

UAb:

Yes. An example is the virtual programming lab. The VPL - Virtual Programming Lab coupled with the e- learning experience at UAb offers students a complete programming environment, and professors the means of creating and evaluating code development exercises.

**Does the institution have remote labs?**

UTU and UAb : No.

USGM:

Our institution uses remote laboratories in:

· Electrical Engineering (EE)

· Thermochemical and Electrochemical Energy Conversion Systems (TEECS: Reactors and Fuel Cells)

· Management of Advanced Powertrain Systems (MAPS: hybrid and alternative fuels vehicles, powertrain and road management)

The Electrical engineering course is present:

- in the first year of the Computer Engineering Study Course of the Degree Course in Applied Sciences and Technologies

- in second year of the Industrial Engineering Study Course of the Degree Course in Applied Sciences and Technologies

The Thermochemical and Electrochemical Energy Conversion Systems course is present:

- in the first year of the Energy and Nuclear Engineering Study Course of the Degree Course in Applied Sciences and Technologies

The Management of Advanced Powertrain Systems course is present:

- in the third year of the Informatic Engineering Study Course of the Degree Course in Applied Sciences and Technologies

Courses breadown:

Electrical engineering course:

Total hours 150 divided as follow:

Lessons: 35%

Guided exercises: 10%

Self-assessment test with feedback: 15%

E-tivity: 30%

Faq: 5%

Virtual rooms: 5%

Thermochemical and Electrochemical Energy Conversion System course:

Total hours 300 divided as follow:

Lessons: 35%

Guided exercises: 10%

Self-assessment test with feedback: 15%

E-tivity: 30%

Faq: 5%

Virtual rooms: 5%

Management of Advanced Powertrain Systems

Total hours 150 divided as follow:

Lessons: 50%

E-tivity: 40%

Faq: 5%

Virtual rooms: 5%

EE: Total hours 150 to be delivered in 8 weeks

TEECS: Total hours 300 to be delivered in 8 week

MAPS: Total hours 150 to be delivered in 8 weeks

The e-tivity is delivered exclusively online and the study takes place exclusively in synchronous mode.

The e-tivity consists of an immersive moment inside a real laboratory where the student will be able, through interaction with real instruments, to carry out measurements by answering a preliminary question posed by the teacher upon entering the area. laboratory. Furthermore, in parallel with the exercise activity, moments of discussion between teacher and student and between teacher and students and between students and students with the teacher or a tutor as moderators are planned and scheduled periodically by the teacher or disciplinary tutor of the course. In these moments the student is called to illustrate and discuss the report that he sent to the teacher at the end of the exercise. It is therefore a dynamic didactic approach where the student is asked to simulate real measurement cases with real instruments while being in his own home or in any other place that is not the laboratory itself.

Sessions go by reservation of one hour slots

The instrument setting and data collection phase can take place collaboratively, while the final results drafting phase with the relative report to be sent to the teacher takes place individually.

Students work on open problems because undertaking the remote lab e-tivity even if there is a specific task (e.g. undertake a charge and discharge of a capacitor) this task is an open problem because the student can choice freely how to undertake the task)

The equipment used is:

University teaching platform + Lab server + Arduino/Raspberry + Programmable power and load dc supply + UC/batteries/fuel cells/electrolysers.

First, in order to understand and know how to apply most of the techniques described in the teaching, it is necessary to have successfully taken the exams of: Mathematics I, Mathematics II and General Physics or Applied Physics.

Secondly, each e-tivity is supported by a description material (slides) to be read before doing the laboratory-work.

The laboratory activity is assessed by assessing the report drawn by each student where the validity of the choices of the inputs inserted in the tools and the outputs thus obtained and the related analysis (e.g. characteristic curve, time constant, efficiency, capacity/power density and related performance behaviour).

Finally this assessment is part of the global assessment of the courses.

The laboratory (Remote Laboratory E-tivity is a fundamental part of the course, e.g. now being only capacitor charge/discharge in the electrotechnical course it substitute this part of the course)

Regarding the laboratory component cost they are very little being the server a cost of a PC, Arudino/Raspberry very low cost, and being of few voltage and current (up to 30 V and 10 A) programmable DC power and load and small capacitor also these components cost only few hundreds of euro.

Number of students normally registered for the module

EE: 251 students

TEECS: 31 students

MAPS: 12 students

Technology used:

The interface is developed via HTML5 and Phyton so the students engage via web but the students interact with programmable power and load and capacitor.

The Learning Management System is a Proprietary educational platform

The lab is inserted into LMS and thanks to this, students can use SSO, their SCORM is recorded and moreover the lab can use the contact solution among student-student and student-teacher offered by LMS.

The LMS has the scope to verify the student registration and trace his activities, has the scope to show the remote lab e-tivity and interact with the machines

HTLM5 and Phyton are in the lab server, the lab server interact with the LMS that interact with the pc of the students. Please see here below the schematics.

## **Chapter 5. TEL quality practices and support**

* *Name of the partner*
* *Names of respondents, positions, departments*
* *Provide a short introduction describing the methodology you used and the number and types of sources*
* *Please keep your answer short, maximum 1-1 ½ page per question*

### **5.1. Staff professionalization**

* *Has your institution procedures for recruiting and hiring teaching staff?*
* *Do you offer pedagogical training for teaching staff? Do you have courses specific for technology-enhanced learning? How is it organized?*
* *How is the teaching staff coordinated during course delivery?*
* *Do you have support materials available on the intranet for online learning and teaching?*
* *Is pedagogical training mandatory for teaching staff?*

**Has your institution procedures for recruiting and hiring teaching staff?**

UTU:

There are very systematic procedures for recruiting teaching staff. International recruiting has become more and more important and it´s encouraged in policy programmes.

UAb:

Yes. Teaching staff has to be recruited through international call for tenders.

**Do you offer pedagogical training for teaching staff?**

**UTU:**

UTU has organized systematic pedagogical training for teaching staff since 1996. There are courses (“university pedagogical studies”) from 1 ECTS course up to 60 ECTS course. The courses were in the beginning offered in cooperation by the university central administration and the Faculty of Education. Now they are organised by the Faculty of Education.

UAb:

Yes.

**Do you have courses specific for technology-enhanced learning? How is it organized?**

**UTU:**

Yes, there is one 1 ECTS module. It is organized online.

UAb:

Yes. Teacher training focus on online pedagogical and technological aspects. Some workshops/seminars may be held F2F, but usually courses are delivered through the UAb eLearning platform. Courses are organised in the framework of LE@D and conducted by one of its expert teams under the general supervision of Vice-rector Innovation and Quality.

**How is teaching staff coordinated during course delivery?**

UTU:

Teachers in Finnish university system have a great autonomy.

UAb:

All programmes have a coordination team including two or three Faculty members. There is permanent communication between the teaching staff and the coordination team who follows up activities: The coordination team reports on a regular basis to the Department director.

**Do you have support materials on the intranet for online learning and teaching?**

UTU:

There is a wide range of support materials (etc. texts, animations, videos) in intranet. “Teacher support” section is in the main page of intranet. This section includes three sections: “I teach in a classroom”, “I teach online and in a classroom” and “I teach online”. The main idea is to support the pedagogical thinking of teachers when they are designing a learning environment. However, the section includes also concrete ideas and hints eg. on how to use camera in distance teaching and in exams.

UAb:

Yes. The technical help desk service provides support materials. There is also a hub with “new graphic image of UAb courses and accessible document templates” and a Digital Tools Repository, which includes support/suggestions for the following tools: Cooperation and Sharing; Communication and Synchronous Cooperation; Social Participation and Self-Publishing; Instructional Drawing; Concept Map; Media Capture and Playback; Curation; Search; Animation; Media Compression; Bibliographic Reference Management and Generation Management; Gamification; Moodle.

**Is pedagogical training mandatory for teaching staff?**

UTU:

When recruiting personnel for positions that involve teaching, pedagogic studies or a preparedness to carry them out are required.

UAb:

Yes.

## **Chapter 6. Opportunities and challenges for adoption of TEL practices**

**Opportunities and barriers for transformation of education in order: the most important first**

UTU:

1. The use of TEL offers flexible (time, place) learning opportunities. There is not always need to come to campus, but it´s possible to study with recorded lectures. In the long run the use of TEL will save time and resources.

2. TEL can offer “other”, augmented worlds and make learning experience wider in many senses.

3. TEL can add a motivating factor for learning. Through TEL it´s possible to construct new kind of inclusiveness and offer a alternative way for more introvert students, who are not so ready and fast to communicate face to face. TEL also offers an opportunity to practice future skills (remote work, collaboration at distance).

UAb:

1. Online learning contributes to achieve the sustainable development goals, namely to decrease the carbon footprint;

2. Open and flexible education contributes to widen access to quality higher learning opportunities for all;

3. Digital learning is critical to support the digital transition in Europe.

### **6.2. Barriers**

***UTU:***

1. ***Linked to students:*** Pandemic has showed that TEL is not good for all students. It requires good skills in organizing your time, to collaborate and use the multitude of digital services used for curricula, course plan, enrollment, personal study planning, and guidance. Students with low socioeconomic status background may lack infrastructure (broadband, laptop, smartphone) needed for TEL. TEL can also cause social isolation.
2. ***Linked to teachers:*** Some teachers lack of necessary skills to support students when “teaching is going online”. They may also lack understanding of the possibilities of technology and the basics of human learning. The lack of time is often hindering teachers to develop their skills.
3. **Linked to university:** The barriers are partly due to lack of clear digital architecture and smooth interoperability of different systems and tools.

UAb:

1. ***Regarding students:*** The need to adjust to a new learning culture and to increase digital competencies.
2. ***Regarding teachers:*** Teacher training needs to be reorganized in order to focus on continuous digital competency development which require constant updating.
3. **Regarding the university:** The need to conduct an holistic digital transformation process requires additional funding and a deep change in vision, policies and organizational culture.

## **Chapter 7. National Policies**

In the European Higher Education Area, digitalization of education is a key policy area. This is highlighted e.g. in the Digital Education Action Plan for the period of 2021-2027, supporting the sustainable and effective adaptation of the education and training systems of EU Member States to the digital age.The main policy action items of this Action Plan are Fostering the development of a high-performing digital education ecosystem, and Enhancing digital skills and competences for the digital transformation.

Regarding the aims of the UNI-Tel project, the topic of capacity building for digitally competent and confident teachers and education and training staff are in the core of this Plan. In addition,the Plan pays attention to high-quality learning content, user-friendly tools and secure platforms which respect e-privacy rules and ethical standards. These are relevant for the UNI-Tel project as well.

In addition to European Union policies, digitalization is in the agenda of European Higher Education associations, e.g. the European University Association. In practice, the EUA has carried out the DIGI-HE project project for supporting European universities in their strategic approaches to digital learning According to the Association, higher education institutions can boost their strategic approaches to digitally enhanced learning and teaching and enhance their capacity.

The mentioned policies and practices advocate a large uptake of national level policies in practices in the European Union member countries. In the following, we highlight experiences from the UNI-Tel project consortium members in Finland, Portugal and Italy in regards to the mentioned European level policies.

### **7.1. TEL practices in Higher Education in Finland**

**Finland**

In the government program, digitalization in education is handled in the level of policies and practices. In the policy, digital transformation is among other horizontal topics in policy, such as sustainable development and climate change, digital transformation, financial literacy and working life skills. In addition, government is concerned on the impact of the digital shift to jobs with low educational requirements. In practice level, Finland is supposed to be among the countries with highest rate of application of digital technology in higher education and continuous learning of adults. It is estimated, that 60 % of higher education students obtain only fair level of generic/transferable skills. Transferable skills are seen as crucial skills for navigating the technological transformation in the working life. However, digitalization is not only seen in the level of teaching practices, but also as an opportunity for a more networked higher education system. The ministry encourages specialization between the institutions and profiles based on competence areas. Digitalization and development of technical infrastructure is supported by platform development and finance for shared support service development. In the strategy, higher education system will be developed to an open ecosystem, where learners are able to utilize digital opportunities for their continuous learning. Ministry of Education developed in collaboration with educational institutions and stakeholders a Vision 2030 strategy plan for education in Finland. In this vision, the curricula development in higher education institutions should be based on change trends – such as digitalization, robotization and artificial intelligence – in the society and globally. A shared digital service ecosystem should be created in higher education. This includes e.g. development of a modular learning offering, and development of entirely digital degrees in higher education.

**Portugal**

In May 2020, the Council of the European Union proposed the following country-specific recommendation to Portugal, with regard to education and training: “support the use of digital technologies to ensure equal access to quality education and training” OECD /2020). Education Policy Outlook, p. 8<https://www.oecd.org/education/policy-outlook/country-profile-Portugal-2020.pdf>

Digital education policies and practices

The [National Digital Competences Initiative 2030](https://www.incode2030.gov.pt/sites/default/files/incode2030_pt_0.pdf) (INCoDe.2030, 2017), a cross-sector approach to enhancing digital competencies, has five areas of action: inclusion, education, research, qualification and specialisation. INCoDe.2030 has aimed to reach 20 000 enrolments in digital literacy programmes by 2020; invest 2% of gross domestic product (GDP) in Research and Development (R&D) by 2025; and ensure 80% of the population have basic digital skills by 2030. In education, measures include integrating digital skills and resources into teaching, developing digital resources, extending the information and communications technology (ICT) curriculum and designing an ICT reference framework for younger students. The first two, in particular, helped Portugal implement distance learning during the COVID-19 pandemic.

Responding to the need to promote high-quality higher education in Portuguese throughout the world, and the need to invest in adult qualification, the Government approved the legal framework for distance higher education with Decree-Law no. 133/2019 of 3rd September. This legislation establishes a clear framework of principles and rules for the accreditation, organization and operation of distance higher education, supported by the cooperation of Universidade Aberta (Open University) with other institutions. The framework is only applicable to study cycles in which the distance learning courses account for over 75% of the respective study cycle’s total credits, taking into account the characteristics of the cycle itself.

<https://eacea.ec.europa.eu/national-policies/eurydice/content/national-reforms-higher-education-53_en>

Digital Infrastructure policy

The Portuguese state has a dedicated agency, the FCCN, which is the Scientific Computing Unit of the [FCT - Foundation for Science and Technology](https://www.fct.pt/). It aims to contribute to the development of Science, Technology and Knowledge in Portugal.

The unit provides high-speed Internet connectivity and IT services to the Portuguese higher education and research system. More than six hundred thousand students, researchers and staff can rely on the national education network every day. Cost efficiency is in the DNA of FCCN's operation so it is committed to providing common, replicable and shareable solutions to meet the needs of our user community. The unit provides a set of shared digital services that aim to support the development of education and science in Portugal, contributing to the excellence of national education and research.»<https://www.fccn.pt/en/quem-somos/>

**Italy**

In Italy online universities have been recognised by the Ministry of Education, University and Research in 2003 through the Ministerial Decree 17 April 2003 (<https://www.gazzettaufficiale.it/atto/serie_generale/caricaDettaglioAtto/originario?atto.dataPubblicazioneGazzetta=2003-04-29&atto.codiceRedazionale=03A05400&elenco30giorni=false>) and for this reason they are subject to the same evaluation and accreditation process as the universities offering in presence training.

The authority responsible for the accreditation is the Italian National Agency for the Evaluation of Universities and Research Institutes (ANVUR) oversees the national quality evaluation system for universities and research bodies. It is responsible for the quality assessment of the activities carried out by universities and research institutes, recipients of public funding. It is also entrusted with steering the Independent Evaluation Units’ activities, and with assessing the effectiveness and efficiency of public funding programmes or incentive programmes for research and innovation activities. Namely, ANVUR carries out the following tasks**:**

1. Evaluating procedures, results and outputs of institutions’ management, teaching, research and technological transfer activities;
2. Defining criteria and methodologies for the assessment of institutions and programmes (including PhD, Master and Post-graduate medical programmes) with a view to their periodic accreditation by the Ministry;
3. Steering the assessment activities undertaken by universities’ Independent Evaluation Units;
4. Drawing up the procedures for collecting and evaluating students’ satisfaction with programmes (in cooperation with universities’ Evaluation Units);
5. Developing and proposing to the Ministry quantitative and qualitative requirements for the purpose of universities’ establishment, merger, federation or closure, and of study programmes’ activation, merger or closure;
6. Providing benchmarks for public funds allocation at the request of the Minister. It includes the definition of minimum performance levels and standard unit costs for specific services;
7. Assessing the results of program agreements between MIUR and individual institutions and their contribution to the overall improvement of the evaluation system quality, based on expected results and predefined benchmarks;
8. Assessing the effectiveness and efficiency of public funding programmes and incentive programmes for teaching, research and innovation activities;
9. Undertaking further assessment exercises, defining standard parameters and providing technical regulations at the request of the Minister.

The current Higher Education Quality Assurance system has been introduced in Italy by Law n. 240/2010 and Legislative Decree n.19/2012. Following this legislation, ANVUR has developed its own assessment criteria, methodologies and procedures to fulfil its tasks, **in strict adherence to Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG).**

The Italian Higher Education Quality Assurance system is called **AVA** (Autovalutazione, Valutazione periodica, Accreditamento – Self-assessment, Periodic Evaluation, Accreditation) and is operational since 2013. AVA has been developed in order to pursue three main aims:

* To assure that the higher education institutions operating in Italy uniformly provide an appropriate quality of their services;
* To support the exercise by the Universities of responsible and reliable autonomy in the use of public resources and in collective and individual behavior related to education, research and knowledge and technological transfer activities;
* To improve the quality of education and research.

AVA sets standards for the self-assessment by programmes and institutions, concerning their internal procedures and the outcomes of their activities, and for the external assessment of the quality assurance systems. External evaluation is based on peer review, is carried out by experts appointed by ANVUR through on-site visits and document analysis. It addresses the following activities:

* Accreditation of new Universities and programmes
* Periodic accreditation of Universities and their programmes

In each University the Quality Assurance (QA) key actors are the following: the Nucleo di Valutazione (Independent Evaluation Unit – NdV), the Commissioni paritetiche docenti-studenti (Joint Teaching-Student Committees – CPDS), the Presidio di Qualità (Unit responsible for the internal QA system – PQA).

AVA sets and evaluates 4 main macro-categories/requirements (R):

R1: University vision, strategies and policies on teaching and research quality.

The University has a solid and coherent teaching and research quality assurance (QA) system, which supports continuous improvement and strengthens external responsibility. This system has been clearly translated into public strategic planning and guideline documents. The consistency between the strategic vision and the objectives defined at the central level are ensured regarding policies, internal organisation, use of teaching and teaching personnel research potential according to individual inclinations, results achieved, periodic verification and the application of improvement measures.

R2: Efficacy of the University Quality Assurance policies.

The Quality Assurance system implemented by the University is effective for defining internal responsibilities, information flows and the interactions between the responsible organisations and their management role in the Departments and Academic Programmes evaluation and self-assessment processes.

R3: Academic Programme Quality.

The objectives identified in the Academic Programme planning are consistent with the cultural, scientific and social needs and consider the characteristics that distinguish the Bachelor’s and master's degree Programmes. For each Programme the availability of adequate teaching resources, personnel and services are guaranteed, monitoring of results and strategies adopted for correction and improvement and student-centred learning are included. For international Academic Programmes of the a and d types (table K), the provisions of the Joint Accreditation Approach adopted by the EHEA Ministers in 2015 shall apply.

R4: Research and third mission quality.

The research and third mission Quality Assurance system is effective, with a policy defined and ordered by the University and is followed by the Departments and similar organisations.

**Included in R1 there’s a specific section dedicated to distance and online learning:**

R1.T Objective: ensure that the Telematic University clearly communicates about the delivery methods of distance teaching and its related, required and used technological equipment.

This section focuses its attention mainly on 3 aspects related to distance learning:

* 1. *Support services for distance learning software*. The evaluators assess the following:

· Was the adopted LMS and its organisation described for the general sections and single lessons (environments organisation, tools available in individual environments, access profiles)?

· Do the teaching methods adopted consider the recent evolution of technology (use of web conference environments, mobile devices)?

· Are the facilities adequate and consistent with the educational choices set out in the Service Charter?

· Has the University activated a technical service for virtual learning environment management? If so, is its size appropriate for the expertise and employee numbers?

· Is student access to the group contents and activities guaranteed for at least three years?

· Has the University explained the possibility of “certified presence” solutions for training and evaluation activity participation? Has it indicated its implementation methods?

* 1. *Single sign on*:

Has the "single sign on" method been indicated and guaranteed, particularly:

- relationship between e-learning teaching and administrative services, (E.g. relationship between electronic record book and LMS); - relationship between the chosen LMS, the other information resources (libraries, databases ...) and the university system services (guidance, internship, job placement ...)

* 1. *Accessibility:*

· Is the LMS and educational content accessibility guaranteed for different skills to remove IT barriers that hinder students with different abilities from using learning technology?

· Are there any actions planned to improve the general accessibility to online services?

The Agency cooperates with international, European bodies and other international scientific bodies working in the field of evaluation of higher education and research systems. It follows the European Standards and Guidelines for quality in Higher Education, ESG-ENQA approved by the European Ministries in the 2005 Bergen Conference and adopted in European Parliament and Council (2006/143/CE).

The sections “Agenzie di Valutazione” (Evaluations Agencies) and “Organizzazioni Internazionali” (International Organisations) have links with International agencies dealing with the evaluation of the University and Research system.

ENQA MEMBERSHIP

On November 14th, 2017, with a formal letter to ENQA, ANVUR expressed its interest to undergo the procedure for admission to the *European Association for Quality Assurance in Higher Education* (ENQA), and at the same time to apply for inclusion in the *European Quality Assurance Register for Higher Education* (EQAR). After receiving the confirmation of Eligibility from EQAR (March 1st, 2018), on the 19th of March 2018 ANVUR published on its website the document [Terms of Reference](http://www.anvur.it/wp-content/uploads/2018/05/ToR_ANVUR_ENQA.pdf). The procedures include the drafting by ANVUR of a [Self-Assessment Report](http://www.anvur.it/wp-content/uploads/2018/09/SAR-20_9_2018.pdf) (SAR), published on September 26th, and the on-site visit by a panel of experts appointed by ENQA.

Based on the Review Report of the ENQA panel, the ENQA Executive Board will take a decision on accreditation of ANVUR when it meets in April 2019.

### **7.2. Approaches and Methods for Quality Assurance**

Quality assurance approaches differ across the European Union member states. In the following, we highlight two brief cases from Finland and Portugal.

**Finland**

The Universities Act (558/2009) and the Act on Universities of Applied Sciences (932/2014) contain provisions which oblige HEIs to participate in external evaluation of their activities and quality systems, and for the evaluation results to be public. HEIs also have the possibility to meet their statutory obligation through means other than participating in the audits carried out by FINEEC, The Finnish National Education Evaluation Council. The legislation also allows FINEEC to operate across borders.

The autonomy of HEIs to develop their quality systems according to their own needs and goals is a central premise for the audit model. The autonomy and strategic development of HEIs is supported in the audit model by offering HEIs the possibility to select one of the evaluation areas as well as a benchlearning target. FINEEC’s 2018–2024 audit model for HEIs assesses the functionality and effectiveness of the quality systems of HEIs. The focus of the audit is on the procedures used by the HEI to maintain and enhance the quality of its activities.

**Portugal**

The A3ES quality assurance approach is based on an external quality assurance model, a combination of internal quality assurance system, self-evaluation and external evaluation, in which the HEI’s internal monitoring and evaluation processes are analysed and used in the external quality audit and accreditation process. It adheres to standards defined in the European standards and guidelines (ESG), transposed into national legislation that establishes educational institutions as those primarily responsible for the quality of the education provided.

Every HEI is responsible for defining the internal evaluation model. Each has a duty to adopt a quality assurance policy for their study cycles, ensuring appropriate procedures, promoting a culture of quality and quality assurance, as well as developing and implementing a continuous quality improvement strategy.

There are core regulations stemming from the law regarding internal evaluation that HEIs must comply with. Among the general requirements of higher education institutions ([Law no. 65/2007, 10th September, Art. 40](https://dre.pt/pesquisa/-/search/629393/details/maximized)) is ensuring teacher, researcher, and student participation regarding how the establishment is governed through the general council. Students should represent at least 15% of general council members. In terms of the legislative structure that formalised the HEI evaluation system, student participation takes other forms, such as their presence on the advisory council, in the self-evaluation processes associated with institutions’ internal quality assurance systems, and external evaluation via external evaluation teams (*Comissões de Avaliação Externa* - CAE).

Internal evaluation takes place annually and its results must be made available to the A3ES. In turn, the A3ES provides a set of internal evaluation recommendations for HEIs in its [evaluation manual](https://www.a3es.pt/pt/acreditacao-e-auditoria/manual-de-avaliacao) (e.g., measures to prepare the institution for internal evaluation and the self-evaluation report). The broad participation of stakeholders in the diagnosis, implementation, evaluation and review – at every stage of the quality cycle - is important and, for example, the use of SWOT exercises involving students, teachers, employees and employers in the institution’s diagnosis is valued.

For the description of the quality assurance of higher education in Portugal, see:

<https://eacea.ec.europa.eu/national-policies/eurydice/content/quality-assurance-higher-education-53_en>

In both of the cases, a multi-stakeholder review model is in use. Transparency of the audit model, the agenda, the topics covered, and the results gained from the exercise is crucial in building trust to the quality assurance system. Broad participation from the stakeholders and opportunity to engage with the findings for lessons learned is important also for the idea of continuous improvement in quality and operations.

### **~~7.3. Mission statement and strategy of the National Evaluation and Accreditation Agency~~**

**~~Finland~~**

~~Finnish National Education Education Council (FINEEC) is responsible for evaluating education and training in Finland. FINEEC’s evaluations produce information and development recommendations for local, regional and national decision-making and development work as well as for international comparisons. The evaluation activities comprise national learning outcome assessments, thematic and system evaluations and evaluations of quality systems, including audits of higher education institutions.~~

~~According to the FINEEC, a central premise in the planning of the audit framework has been the~~*~~Standards and Guidelines for Quality Assurance in European Higher Education Area~~*~~(ESG), which emphasises~~**~~competence-based, student-centred and research-based~~**~~approach in education. In the student-centred approach, students are encouraged to take an active role in the learning process.~~

~~Another central premise in the audits continues to be the~~**~~autonomy of HEIs~~**~~to develop their quality systems according to their own needs and goals. The autonomy and strategic development of HEIs is supported in the audit by offering HEIs the possibility to select one of the areas of evaluation as well as a benchlearning target.~~

~~The audit framework emphasises the~~**~~impact of the HEI’s activities~~**~~as part of the education, research and artistic activities. The impact can be manifested in education and culture, well-being, research which generates new knowledge, or as active participation in regional development, reform in society or solving global challenges. Audit is independent evaluation conducted by an external audit team. The FINEEC audits cover all the activities of the HEI. The focus of the audit is on the procedures used by the HEI to maintain and enhance the quality of its activities, which is assessed in four evaluation areas (see the Audit manual for higher education institutions 2019-2024).~~

~~In the field of engineering, specific audits are carried out for engineering programme accreditations. Thers audits are independent evaluation conducted by an external audit team. The FINEEC audits cover all the activities of the HEI. The focus of the audit is on the procedures used by the HEI to maintain and enhance the quality of its activities, which is assessed in four evaluation areas.~~

**~~Portugal~~**

~~The national evaluation and accreditation agency (~~[~~Agência de Avaliação e Acreditação do Ensino Superior~~](http://www.a3es.pt/en) ~~- A3ES) is the competent authority to evaluate and accredit higher education institutions and their study cycles. The Agency is an independent body vis-à-vis state and institutions and aims to promote and ensure quality in higher education.~~

~~“The mission of A3ES is to contribute to improving the quality of Portuguese higher education, through the evaluation and accreditation of higher education institutions and their study programmes, and to ensure the integration of Portugal in the European quality assurance system of higher education.”~~ [~~https://a3es.pt/en/about-a3es/mission~~](https://a3es.pt/en/about-a3es/mission)

~~The evaluation and accreditation regime to be developed by the A3ES) is defined in Law no. 38/2007, of 16~~~~th~~ ~~August. See~~ [~~https://a3es.pt/en/about-a3es~~](https://a3es.pt/en/about-a3es)

~~For a description of A3ES' strategic planning for 2021-2024, see~~ [~~https://a3es.pt/en/about-a3es/strategic-planning/strategic-planning-2021-2024~~](https://a3es.pt/en/about-a3es/strategic-planning/strategic-planning-2021-2024)

### **7.4. Future National Policies practices, efforts, initiatives, frameworks that relate to TEL quality**

~~The main questions in this theme were:~~

* ~~Are you aware of any plans to design new policies?~~
* ~~If yes, are National-wide stakeholders involved in developing TEL criteria (policy makers, National or regional authorities, associations etc.)?~~

~~UTU~~

~~YES:~~

The UNI-Tel project has a special concern to Quality Assurance in digitalization of higher education. This is legitimized by the fact that educational policies call for critical review of practices and continued dialogue between stakeholders to improve the quality in training provision. These attempts have to based on an understanding of the state-of-the art in digital learning, and what practices are in use in the organizations. Representation of individual efforts do not form a wholesome view on the institutional capacities. In the following, we highlight future national policies that are targeted for TEL quality assurance.

* The Vision for the Finnish higher education and research in 2030 document was drawn up in cooperation with higher education institutions and other stakeholders and was published in October 2017. In 2019, a Roadmap was published for implementing the Vision by 2030. In this vision, it is seen that Digitalisation and openness will renew teaching, learning, research and innovation activities as well as higher education institutions and will open up new channels for effectiveness. In the Roadplan, It is seen that leveraging digitalisation in higher education calls for new pedagogical thinking. In higher education, modularity and availability of digital courses and guidance services will be increased and new pedagogical approaches introduced. The volume of digital studies and the number of degrees that can be completed digitally will be increased to improve access to education and boost international student recruitment.
* In Finland, the Ministry of Education and Culture coordinates the activities of higher education institutions, science agencies and research institutes and acts as their main financial source. The Ministry interacts continuously with higher education institutions, science agencies and research institutes and holds agreement negotiations with them. In the Finance model for universities, 42% comes based on indicators in education, 34% in research and 24% in other education and science policy considerations. Within the last segment, 15% is given based on strategic development indicators. The Ministry has specific programs for development of digitalization, e.g. the Digital learning environments in higher education institutions.
* The aim is that higher education institutions jointly produce teaching online and agree on mutual cooperation and division of work in online teaching. Higher education institution-specific measures regarding the objectives of the key project will be agreed in performance agreements with the universities and universities of applied sciences.

**In this case, the development of quality assurance in TEL is based on the customary Finnish approach of guidance and direction by allocation of resources and negotiation of policy aims between the ministry of education and culture, and respective HEIs. Follow-up of the policy action plans and concrete actions are assigned to the quality assurance audits conducted by the Finnish Education Evaluation Council.**

~~Not necessarily.~~

- In Portugal, the activities of higher education institutions, science agencies and research institutes are coordinated by the [Ministry of Science, Technology and Higher Education](https://www.portugal.gov.pt/pt/gc21/area-de-governo/ciencia-tecnologia-e-ensino-superior) which acts as the main financial source of public institutions as well. The Ministry interacts continuously with higher education institutions, science agencies and research institutes and holds agreement negotiations with them.

- In the Portuguese higher education landscape, modularity and availability of digital courses and guidance services will certainly be increased and new pedagogical approaches introduced. The number of degrees and non formal courses that can be completed digitally will be increased to improve access to education and boost international student recruitment.

- The approval of the new EU digital education action plan will most probably influence the emergency of new digital higher education national policies in Portugal. As a new Government is set to take over in the country in first semester of 2022, this trend might have a significant push in the political agenda.

- The most important national stakeholder involved in developing TEL criteria in the higher education sector are public universities and the Rector's Council which represent them. The quality assurance agency A3ES is playing also an important role. Amongst these institutions, UAb for its expertise plays a major role in the process. (**Portugal)**

In the Portuquese case, a similar approach has been taken. As mentioned here, also in Finland the Rectors Councils have a strong instructive role in policy development. However, in both of these cases the responsibility is in the HEIs, which as autonomous actors translate the national policy actions to their operations. The national and international quality assurance audit models in use provide an opportunity to external stakeholders, like ministries, to monitor development of these autonomous actors in line with the larger framework of quality assurance in TEL. One central observation here is the agenda for the audits - if TEL is not covered in a comprehensive way in the audits, the question of TEL QA may remain in the margins.

**~~7.5. Needs for National Policies practices, efforts, initiatives, frameworks that relate to TEL quality~~**

* ***~~Which area(s) of legislation pose a significant challenge to the application of TEL quality methods?~~***

**~~Finland~~**

~~To our attention, the legislation is quite supportive to advance and use of digital learning in higher education.~~

**~~Portugal~~**

~~Given Portugal has a specific legal framework for distance higher education and also dedicated legislation to support digital learning and open science, the only challenge left is to coordinate this with all the other legislation regulating higher education processes.~~

* **~~What should be improved? Please provide any recommendations you may have regarding policy reforms (at all levels) that would help your organization establish TEL quality processes.~~**

**~~Finland~~**

~~A national networking university was established to overcome the challenges of making technical and engineering university studies available in all areas of Finland. This network established a wide ecosystem of MOOC courses online, created in collaboration with all universities of technology in Finland. Now the project funding for this has ended, and the network no longer has external resources to carry own with the MOOC development. In Finland, transition from projects to basic organizational tasks is sometimes challenging. In conclusion, there should be a more strategic approach to development of a learning ecosystem.~~

**~~Portugal~~**

~~The integration of open education in the open science policies and its connection to the distance education legal framework. This refers in particular to the increasing interdependence between non formal, informal and formal education.~~

* **~~Please provide any ideas you may have regarding reforms in educational policies (at all levels) that would help your organization establish TEL quality processes~~**~~.~~

**~~Finland~~**

~~Criterion based learning is still in the making in Finland:~~

~~Use of microcredentials and open badges should be expanded in collaboration between educational institutions within the technical and engineering sector. This would allow development of stackable credentials and continuous learning, and enable learners to move forward in their educational path, with their prior learning recognized.~~

**~~Portugal~~**

~~A major issue is the opening up of certification and the fostering of integrating non formal learning opportunities with formal higher education. In particular, UAb is promoting the use of microcredentials and open badges.~~

* **~~Please provide any ideas you may have regarding reforms in educational policies (at all levels) that would help your organization establish TEL quality processes.~~**

**~~Finland~~**

~~In order to support the government approach of developing an open ecosystem of digital learning, the Finnish National Education Evaluation Council FINEEC should take in their evaluation program the assessment of the actions taken and impact achieved in this area, preferably with development of indicators for advancing TEL in higher education. Oftentimes, what is measured with be achieved, and the national evaluation program is very effective in development of the education system.~~

**~~Portugal~~**

~~In the~~ [~~Action Plan for Portugal's Digital Transition~~](https://www.portugal.gov.pt/gc22/portugal-digital/plano-de-acao-para-a-transicao-digital-pdf.aspx) ~~key goals are prioritized; e.g. “Expanding the training offer of higher education institutions and bringing them closer to companies, ensuring a response to the specific needs of the labour market in the field of digital skills” (see 3.2.).~~

**~~Italy~~**

~~TEL quality methods do not meet particular challenges in Italy. In general crucial brakes are put to University and Research in Italy, where the expenditure for Higher Education is lower than in the majority of the other European and OCSE countries, both in relation to the number of students and in relation to the Gross Domestic Product (OECD, Education at a Glance 2017). Looking in more detail, in 2014 the expenditure per student in Italy was 11.510 US $ compared to more than 16.140 US $, which is the average expenditure in OCSE countries. Poor investment in Education and Research results in serious difficulties in the continuous improvement of the University system, of course affecting also TEL and the establishment of consistent TEL quality processes.~~

### **7.6. Training Needs for TEL Quality**

**~~Are there any training curriculums for TEL/(online teaching practices in general?~~**

**~~Finland~~**

~~There was a national TieVie project on 2001-2006 (Peurasaari 2008) which organized training for teachers and instructional designers of all Finnish universities (8 and 15 ECTS courses). After that university has organized short seminars. Also short online courses (1 ECTS) organized by other universities have been available. In 2022 the new national initiative (Digivision2030) will organize courses for all universities.~~

**~~Portugal~~**

~~Yes. UAb has developed dedicated training curricula on online education for teachers and tutors.~~

**In the data collection from the European Union partner countries, we investigated the main policy objectives in the countries to gain a deeper understanding on what objectives should be set for capacity building in digital education. In the following, we illustrate these objectives identified in Finland and Portugal**

**Finland**

1. Solid basis of understanding the main pedagogical principles and theories is the key for successful and innovative use of TEL, such as following:

Student-centered mindset in theory and practice

1. Understand the concept of collaborative learning as a way to build expertise
2. Find ways to support individuals and groups in TEL
3. Learn means to assess and give feedback in learning process
4. Get to know TEL tools to realize different pedagogical aims

**Portugal**

1. To develop online communication, interaction and collaboration skills and incorporate dynamic learning activities, which promote the development of new digital skills of students required in different learning situations;

2. To critically reflect on pedagogical practices, presenting proposals for improvements and transformation in teaching practice and student learning in online, hybrid and blended learning;

3. To integrate evidence from current research in the field of educational design into pedagogical practice;

4. To analyze existing assessment strategies, namely by creating innovative assessment approaches;

5. To develop digital competencies and skills in the use of digital tools applied to different contexts of online learning.

In both of these cases, attention is drawn to student-centred approaches in education, and forming a community of practice amongst users in digitalization. This is based on critical review of practices, and forming a common understanding of the practicalities when transforming modes of delivery to a more blended learning or hybrid, or even entirely digital form of teaching and learning.

**Competence Development - Who should be trained for TEL/online practices?**

As a general take-home message from the analysis of the data collected in EU partner countries, staff competence development and sharing of good practices are emphasized:

* Teachers and instructional designers should be trained and have an opportunity to systematically share ideas and experiences on TEL. Also senior managers and directors should have training/workshops on the possibilities and practices of TEL and compare their ideas with their colleagues. (Finland)
* The target groups that should receive specific training include teachers and tutors, senior managers and directors, learning designers and support staff, but also students. Each of this target groups have different training needs and training should be organized differently. Most importantly, training should be conducted online and have an immersive nature. (Portugal)

These findings are in line with the European Union and European University Association policies discussed earlier. The academic community, and the staff members are naturally as a collective responsible for creating a new digital culture of learning.

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