



**KAZAKH UNIVERSITIES TO FOSTER QUALITY ASSURANCE PROCESSES IN
TECHNOLOGY ENHANCED LEARNING**

Project № 598377-EPP-1-2018-1-IT-EPPKA2-CBHE-SP

EUROPEAN TEL ROADMAP FOR QA STANDARD



Co-funded by the
Erasmus+ Programme
of the European Union

The European Commission support for the production of this publication does not constitute endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

DELIVERABLE DESCRIPTION	
Deliverable number and name	D1.2 European TEL Roadmap for QA standard
Due date	15/08/2019
Work Package	WP1
Editor:	Bill Vassiliadis, HOU
Contributors:	Monica Fasciani, USGM Sara Cella, USGM Timo Halttunen, UTU Mariya Monova-Zheleva, BFU
Reviewers	
Approved by	
Dissemination level	
Version	1.0

Document history

Issue date	Version	Comments
3/8/2019	1.0	

Disclaimer

This document contains the description of the KUTEL project work and products. Certain parts of it might be under partners' Intellectual Property Right (IPR) rules therefore, prior to its use please contact the consortium leader for approval.

In case you believe that this document harms in any way IPR held by you as a person or as a representative of an entity, please do notify us immediately.

The authors of this document have taken any available measure in order for its content to be accurate, consistent and lawful. However, neither the project consortium as a whole nor the individual partners that implicitly or explicitly participated in the creation and publication of this document hold any sort of responsibility that might occur as a result of using its content.

Table of Contents

Acronyms.....	6
1. Introduction.....	7
1.1. Scope.....	7
1.2. Methodology.....	8
2. Best Practices	10
2.1. Introduction	10
2.2. Best Practices: Bulgaria	10
2.3. Best Practices: Finland	21
2.4. Best Practices: Greece.....	27
2.5. Best Practices: Italy	35
3. TEL Roadmap	45
3.1. Basic principles.....	45
3.2. Strategic goals.....	46
3.3. Mapping of TEL roadmap to ESG	49

List of figures

Figure 1. Roadmap axes.....	45
Figure 2. Mapping of Strategic goals to ESG guidelines.....	50

List of tables

Table 1. Template for recording Best Practices	8
Table 2. Categorization of best practices.....	10
Table 2. BFU: IS support to QA system best practice.....	16
Table 3. BFU: TEL realization through collaboration with the industry best practice	20

Table 4. UTU: Electronic examination system best practice.....	23
Table 5. UTU: Electronic theses best practice.....	27
Table 6. HOU: Virtual course meeting best practice.....	29
Table 7. HOU: Evaluation best practice.....	34
Table 8. USGM: Self-assessment for student best practice	38
Table 9. USGM: Multimedia content production best practice.....	44

Abstract

This deliverable describes the TEL roadmap for QA standard that are currently implemented by the European countries involved in the partnership. The roadmap is a strategic plan that defines the goal for the QA standard, the desired outcomes and major steps (recommendations) needed to reach it. Since there is no a single reference for the quality assurance framework on TEL in Europe, the European partners will use this roadmap as a common working base in order to define, at a later stage, the one for Kazakhstan.

The methodology used is based on lessons learned from of eight (8) best practices that were collected from the EU Higher Education Institutions participating in the project (two from each institution) and the results from the baseline survey (D1.1). The roadmap to the QA standard is defined by setting strategic goals and for each goal, indicative outputs, recommendations and risk for its realization. A mapping of the strategic goals to ESG guidelines is also provided.

Acronyms

BP: Best Practice

ENQA: European Network for Quality Assurance

ESG: Standards and guidelines for quality assurance in the European Higher Education Area

EU: European Union

HE: Higher Education

HEI: HE Institution

KZ: Kazakh/Kazakhstan

SOPCO: System for Evaluation and Maintenance of the Quality of Education and Academic Staff of BFU

TA: Technical Annex

TEL: Technology Enhanced Learning

VLE: Virtual Learning Environment

QA: Quality Assurance

1. Introduction

1.1. Scope

The European TEL roadmap is a strategic plan that defines the goal for the QA standard, the desired outcomes and defines the major steps and milestones needed to reach it. Since there is no a single reference for the quality assurance framework on TEL in Europe, thus the European partners will use the roadmap that will represent a common working base among the European countries involved in the project and a starting point in order to define, at a later stage, the one for Kazakhstan. The roadmap will also serve as a communication tool, a high-level document that helps articulate strategic thinking between KUTEL partners.

The roadmap indicates concepts of quality that can be applied at Macro (National/international), Meso (institutional) and Micro (individual practice) levels and will be largely based on EU experience and adopted guidelines such as ESG (Standards and guidelines for quality assurance in the European Higher Education Area)¹. Furthermore, using the findings of D1.1 - State of the Art of HE for TEL Quality Assurance Framework, the roadmap identifies, besides the strategic objectives, the key priorities, performance indicators and outputs/activities key actions to define a QA framework for TEL. A rather significant gap between EU and KZ quality practices in TEL has been identified although in general, the country's HEIs have taken significant steps as far as general Quality Assurance practices are concerned. The state-of-the-art report also indicated that formal or widely accepted EU frameworks for TEL are scarce while there is a variety of quality tools from various initiatives (mainly from EU funded projects) that are now widely adopted. Current EU frameworks mainly focus on QA at an institutional level. In the case of accreditation processes, which are not TEL specific, there are definite deficiencies with significant room for further developments. Universal applicability of several guidelines is not possible due to the need for significant tailoring to National needs. Comparative reports² on open education quality standards indicate little evidence on performance standards at course level however tailored staff development and performance management criteria do exist for institutions that are engaged in quality assurance of their distance and online education programmes.

In this context, the basic goals of the roadmap is to define strategic objectives that:

- mainstream TEL quality into institutional quality assurance processes.
- support the contextualization of the TEL quality system.

¹ <https://enqa.eu/index.php/home/esg/>

² Ossiannilsson, Ebba; Williams, Keith; Camilleri, Anthony F.; Brown, Mark: Quality models in online and open education around the globe. State of the art and recommendations. Oslo: International Council for Open and Distance Education 2015, 52 S. - URN: urn:nbn:de:0111-pedocs-108795.

- support development through documentation of best practice and exchange of information.
- Assists institutions in designing a personalized quality management system for TEL, were needed.
- Addresses quality issues around credentialization through qualifications frameworks.
- Supports quality assurance audits and benchmarking in TEL.

1.2. Methodology

According to the methodology defined in the TA, two (2) best practices per EU HEI (8 in total) were gathered and analyzed. The following template was used to record the best practices:

Title:	<i>Descriptive title for the BP, 3-5 words</i>
Organisation:	<i>Organization's name and Country</i>
Category:	<p><i>Choose one from the list (see Desk Research categorization document):</i></p> <ul style="list-style-type: none"> • <i>Initiation/Analysis</i> • <i>Design: conceptualize and design TEL courses</i> • <i>Implementation: implement a TEL course draft and finalize it through testing</i> • <i>Realization: realize and perform the TEL course including support and assessment Evaluation: define, run and analyse the evaluation and improve the TEL course</i> • <i>Other</i>
Short Description:	<i>One paragraph description of the BP</i>
Process description:	<i>Description of how the process works, especially the steps taken and the goal of each step.</i>
Stakeholders:	<i>Which stakeholders (internal or external) are involved in which step. This could be alternatively included in the previous section.</i>
Timeline:	<i>When should each step occur. This could be alternatively included in the process section.</i>
Resources:	<i>What resources are needed (personnel, technical, costs etc.)?</i>
Measurements:	<i>How is success of the process measured? (if applicable)</i>
Contribution to Organisational policies:	<i>What is the contribution of the process to the organizational strategy? This is where you describe why the process should be a best practice for other organisations.</i>
Advantages:	<i>What are the advantages of using this process?</i>
Limitations:	<i>Limitations.</i>
More information:	<i>Links, references for more information.</i>

Table 1. Template for recording Best Practices

The best practices were analyzed, and specific strategic objectives were identified. Goals and metrics were derived from the ESG and the recommendations from D1.1.



2. Best Practices

2.1. Introduction

The best practices per EU HEI are presented in the next sessions. Eight practices were recorded, two for each of the following institutions: BFU (Bulgaria), UTU (Finland), HOU (Greece) and USGM (Italy).

The best practices included in this section cover all phases of the TEL lifecycle -from initiation to evaluation- as the following table depicts:

Lifecycle Phase	Provider	Number of best practices
Initiation / Analysis	BFU	1
Design	USGM	1
Realization	BFU, UTU, USGM, HOU	5
Evaluation	HOU	1
Total		8

Table 2. Categorization of best practices

2.2. Best Practices: Bulgaria

Title:	The surveys as information support to quality management system
Organisation:	Burgas Free University Bulgaria
Category:	<ul style="list-style-type: none"> Initiation/Analysis
Short Description:	<p>The System for Evaluation and Maintenance of the Quality of Education and Academic Staff (SOPCO) to Bourgas Free University is based on the requirements of the Higher Education Law and the international standard - ISO 9001: 2008. Its purpose is to demonstrate the ability of BSU to provide an educational process and a scientific product that satisfies the user's requirements, including continuous improvement. The main functions of the SOPCO and the relevant quality bodies are:</p> <ol style="list-style-type: none"> analyzing, controlling and optimizing the specialties at the university. analysis, control and optimization of the disciplines. Studying the opinion of students, consumers, teachers about their satisfaction with the quality of the training.

	<p>4. Results processing, verification and data analysis.</p> <p>5. control and discussion of results at different levels of government.</p> <p>6. attestation of teachers and employees.</p> <p>7. training of SOPCO educators.</p> <p>8. upgrading and updating of the quality records.</p> <p>In accordance with the provisions of the SOPCO, the inspectors from the Quality Department conduct surveys to determine the satisfaction of the subjects and assessment of lecturers each semester.</p> <p>The following surveys are carried out for information support to quality management system: Poll among students; Survey among candidate students; Survey among students to evaluate lecturers; Poll among the students for the assessment of the discipline; Survey among students for the final session exams; Survey among students about their opinion about the internships; Survey on Foreign Students; Poll among students for student research; Survey among graduates; Survey among former students; Poll among lecturers; Lecturer Self-Assessment Survey; Survey among students for administrative services; Poll among students for the university library; Employers survey.</p> <p>The results of the questionnaires are analyzed by the university management and through the system of decision making and control specific measures are planned.</p> <p>Based on a survey conducted on the needs for the upgrading and career development of lecturers in BSU, specialized courses are organized on a regular basis as Modern educational strategies based on the latest information and communication technologies; Develop curricula and programs linked to the Accumulation and Credit Transfer System; Methodology of academic teaching and research; Psychological and communicative aspects of teaching; Protection of copyright and intellectual property.</p> <p>The results of the questionnaires support the process of continuous curriculum updating, which seeks to adapt the curriculum to the rapidly changing demands of society, business and industry as well as world trends in higher education.</p>
<p>Process description:</p>	<p>The Quality Department conducts surveys with students - bachelors, masters, PhD students and foreign students, with faculty, administration, graduate students and employers. Purpose: Primary data is collected on standardized questionnaires designed to assess the</p>

	<p>learning environment, teaching staff, administrative services, courses, specialties. Reports are being prepared.</p> <p>The Quality Department provides reports on the results of each type of surveys to Deans, Vice Rector for Academic Affairs, Rector and President of BSU. Purpose: On the basis of the conclusions of the reports, measures are being taken to update the content of the course, to reveal new specialties, to determine the amount of the annual salary of teaching and administrative staff.</p> <p>The results of the surveys are discussed in the Educational Programs and the Educational-Scientific Council. Purpose: Suggestions are being made to solve the problems that have arisen.</p> <p>After discussing the problems decisions of the Academic Council are taken.</p> <p>Orders with specific measures are issued by the Rector and / or the President.</p>
<p>Stakeholders:</p>	<p>The Quality Department</p> <p>Deans, Vice Rector for Academic Affairs, Rector, President of BSU</p> <p>The Educational Programs</p> <p>The Educational-Scientific Council</p> <p>The Academic Council</p>

Timeline:	<p>Based on the type of respondents, the Quality Department conducts surveys:</p> <ul style="list-style-type: none"> ▪ with students - bachelors, masters, PhD students and foreign students - each semester; ▪ with lecturers, administration, graduate students and employers - every year. <p>At the end of each semester at the Program Councils and Educational-Scientific Council the results of the surveys are examined.</p> <p>In May, the Educational-Scientific Council discusses curricula/ new specialties and offers proposals to the Academic Council.</p> <p>In June, the Academic Council took decisions on updating curricula /opening new courses.</p> <p>In December, each teacher receives an assessment of his / her annual work on the basis of self-report and student accents. This estimate determines his annual salary.</p> <p>In December, each of the administrative staff receives an assessment of their annual work on the basis of student accents. This estimate determines his annual salary.</p> <p>Periodicity of evaluation of different objects</p>																		
	<table border="1"> <thead> <tr> <th>subject of assessment</th> <th>self - assessment and quality responsibility</th> <th>rating control</th> <th>validation</th> <th>periodicity</th> </tr> </thead> <tbody> <tr> <td>University course</td> <td>Lecturer (training team)</td> <td> Program Coordinator Dean of Academic Activities Quality Department Quality Training Commission of BFU </td> <td> Educational Scientific Council Academic council </td> <td>each year</td> </tr> <tr> <td>Specialty (bachelor's program)</td> <td>Program Coordinator Dean</td> <td> Program Council Educational Scientific Council </td> <td>Academic council</td> <td>the middle of an accreditation period</td> </tr> </tbody> </table>	subject of assessment	self - assessment and quality responsibility	rating control	validation	periodicity	University course	Lecturer (training team)	Program Coordinator Dean of Academic Activities Quality Department Quality Training Commission of BFU	Educational Scientific Council Academic council	each year	Specialty (bachelor's program)	Program Coordinator Dean	Program Council Educational Scientific Council	Academic council	the middle of an accreditation period			
subject of assessment	self - assessment and quality responsibility	rating control	validation	periodicity															
University course	Lecturer (training team)	Program Coordinator Dean of Academic Activities Quality Department Quality Training Commission of BFU	Educational Scientific Council Academic council	each year															
Specialty (bachelor's program)	Program Coordinator Dean	Program Council Educational Scientific Council	Academic council	the middle of an accreditation period															

			Training Commission of BFU		
Specialty (master's program)	Program Coordinator Dean	Program Council Educational Scientific Council Training Commission of BFU	Academic council	the middle of an accreditation period	
Doctoral program	Program Coordinator Dean	Program Council Educational Scientific Council Training Commission of BFU	Academic council	the middle of an accreditation period	
Research	Lecturer/ researcher	Educational Scientific Council Training Commission of BFU	Academic council	each year	
Lecturer	Lecturer/ Department Quality	Program Council Educational Scientific Council Training Commission of BFU	Academic council	each year/ each semester	
Resources:	The Quality Assessment and Management Bodies are the Board of Trustees, the Academic Council, the Educational and Scientific Councils and the Program Councils. In order to administer the quality processes, Quality Commission to the Academic Council, Center Councilors, Program Councilors and Quality Department are formed.				

Measurements:	<p>The opening of new specialties, of which business needs, and which are not available in other universities in the country, is a trend-capturing criterion.</p> <p>The very good realization of the BSU graduates on the labor market is a criterion for correctly determining the trends and adequate updating of the curricula.</p>
Contribution to Organisational policies:	<p>The process of quality control of the educational service in BSU through questionnaires is a clearly defined procedure with clear objectives and a well-established timetable. This mechanism allows specific measures to be taken on a yearly basis in line with the priorities set at National and European strategies for the development of HE and its QA as well as taking into consideration the annual reports and the recommendations of the world's largest educational and scientific societies regarding the curriculum updating that has endeavored to tailor curriculum to the rapidly changing landscape of the society, business and industry, such as ACM Curriculum Recommendations and its regular updates. This process is a good practice because it allows to monitor the dynamics of employers' demands, labor market trends, educational service trends, and accordingly with that can change dynamically the learning environment, the qualification of teaching staff, curriculum content, to reveal new specialties.</p>
Advantages:	<p>The survey provides:</p> <ul style="list-style-type: none"> ▪ standardized responses to targeted issues that can easily be merged into a database; ▪ an opportunity to explore the needs and attitudes of students, graduate students, employers and teachers in terms of quality of education, as well as general questions about the university - learning environment, material facilities, teaching staff, administrative services, libraries. <p>The analysis of the survey results clearly outline the need:</p> <ul style="list-style-type: none"> ▪ from the curriculum updating depending on the needs and requirements of the labor market; ▪ for specialized courses such as training courses for acquaintance with new training technologies, modernization of the training process and raising the qualification of the young teaching staff.
Limitations:	<p>Surveys among graduate students and employers are conducted by phone. This poses a risk:</p> <ul style="list-style-type: none"> ▪ first, to get a refusal to participate in the poll;

	<ul style="list-style-type: none"> secondly, from the possibility of misunderstanding some of the questions asked, but there to obtain inadequate responses, thereby distorting the statistics.
More information:	<p>Survey among students to evaluate courses and lecturers;</p> <p>Survey among graduates to evaluate services.</p> <p>Quality assurance system of Burgas Free University: https://www.bfu.bg/uploads/pages/pravilnik-sopko-23062017.pdf</p>

Table 3. BFU: IS support to QA system best practice

Title:	Realization of TEL courses through University and Industry collaboration
Organisation:	Burgas Free University Bulgaria
Category:	Realization: realize and perform the TEL course including support and assessment
Short Description:	The document provides details about how to enhance the improvement of the TEL courses' quality through integration into the master classes conducted by the representatives of employers' organizations, which are leaders in the corresponding industry domain.
Process description:	<ol style="list-style-type: none"> 1. The lecturer(s), assigned to though for the corresponding TEL course, conduct documentary research related to the identification of the current trends in the corresponding subject domain as well as the business organizations which are the current leaders in the domain. 2. The lecturers apply a proposal for realization of the master class(es) with the involvement of the business representatives to the Program Coordinator. 3. The Program Coordinator presents the proposal at a meeting of the Faculty Council. The proposal is discussed and accepted or rejected. 4. In case of acceptance: <ul style="list-style-type: none"> • With the support of the BFU Career Center, contacts with the representatives of the identified organizations are established. The invitation for such kind of collaboration is sent to the selected business players. The aim is to check which organizations are inclined to engage in master

	<p>classes focused on the specified topic(s) which are included in the curriculum</p> <ul style="list-style-type: none"> The details regarding each master class implementation (topic, structure, methods and contents, place, date and time, necessary equipment, financial issues, and etc.) are specified via active communication with the business organization by the lecturers, IT department (if necessary) and administration of the University. <p>5. Lecturer(s) and students take part at the master class where the representatives of the leading business organizations present and explain case studies from their real practice, cutting edge technologies and solutions in the domain, current trends and challenges faced, etc. The class usually ends with open discussion where students are actively involved.</p>
Stakeholders:	<p>Internal: Students; Lecturers; Management, administration, IT staff.</p> <p>External: Business organizations' management, HR and employees.</p>
Timeline:	<p>The preparation and organizational activities take place before the beginning of the corresponding semester as follows:</p> <ul style="list-style-type: none"> For the winter semester TEL courses – September-October For the summer semester TEL courses – January-February. <p>Detailed description of activities' ordering is provided in the section "Process description".</p> <p>The implementation of given master class depends of the TEL course timeframe as well as of the selected course topic to be implemented as master class.</p>
Resources:	<p>From University side:</p> <p>Personal – management level staff, administrative staff (contracting, payment and etc.), lecturers, technical staff (for support of the master class implementation)</p> <p>Financial – covering transport and accommodation costs as well as honorariums</p> <p>Usage of laboratory / hall; equipment</p> <p>From Company side:</p> <p>Personal – professional(s) with expertise in the domain and topic of the master class; management staff (contracting, permission, etc.)</p>

	<p>Equipment – sometimes the company may ensure the equipment necessary for the master class implementation</p> <p>Note: Very often companies do master classes on voluntary base as a sign of a good will. Another possibility is the expenses to be covered by initiation of internal project for receiving a grant or via fundraising activity.</p>
Measurements:	<p>Comparison between expectation and satisfaction level of the involved parties;</p> <p>Enhancement of the motivation, academic success;</p> <p>Arrangements for University-Industry collaboration</p>
Contribution to Organisational policies:	<p>What is the contribution of the process to the organizational strategy? This is where you describe why the process should be a best practice for other organizations.</p> <p>The motivation for implementation of these initiatives are:</p> <ul style="list-style-type: none"> • Responsiveness to government policy for strengthening the triangle business-research-education • Strategic institutional policy – establishing University-Business collaboration • Access complementary expertise • Employment opportunities for university graduates • Access funding for research (Government grant for research & Industrial funding for research assistance, lab equipment, etc.) • Business opportunity, e.g. exploitation of research capabilities and results or deployment of IPR to obtain patents • Shift in knowledge-based economy • Discover new knowledge/test application of theory • Better insights into curricula development • Expose students and faculty to practical problems/applied technologies
Advantages:	<p>For students:</p> <ul style="list-style-type: none"> • Improvement of the technological competences; • Enhancement of motivation and participation as well as self-regulation and communication competences; • Enhancement of scientific competences; • Better understanding about how the theoretical knowledge included in the TEL course is implemented into the real life practice;

	<ul style="list-style-type: none"> • Broadened awareness about the prospects for career realization and development; • Improvement of the satisfaction level from the course; • Students embrace innovations and new trends. <p>For lecturers and University</p> <ul style="list-style-type: none"> • Improvement of the lecturers' satisfaction level from the course; • Improvement of the of lecturers' entrepreneurial competences; • Knowledge transfer; • Broadening of personal and professional network; • Establish contacts for development of scientific and/ or industrial projects (also involving students) and productive collaborations between company and University research centers (cooperative research); • Chance to start internship program for students and training courses for company staff; • Joint supervision of PhDs and Masters theses, etc. <p>For business organization:</p> <ul style="list-style-type: none"> • Advertising, reputation and image of the company; • Technology transfer (i.e. product development and commercialization activities through university research centers); • Joint research programs (including Joint venture research project with a university as a research partner or Joint venture research project with a university as a subcontractor) • Training Programs for employees • Hiring of talented graduate students; • Cooperative research projects; • Knowledge transfer; • Consultancy.
<p>Limitations:</p>	<p>The geographical distance between the Company and the University – big distance could be a problem.</p> <p>Timeframe - The representatives from the companies are not available at any time and, at the same time, the master classes should be synchronized with the training program of the students and the course timeframe.</p> <p>Slow academic bureaucracies sometimes lead to a halt to the initiative</p>

	<p>These limitations could make the implementation of the master classes impossible.</p> <p>Confidentiality agreements with the company may block the dissemination of knowledge.</p>
<p>More information:</p>	<p>Below are provided some examples (links to the materials) for the successful implementation of master class initiatives in BFU:</p> <ul style="list-style-type: none"> • Master Class “Data Science” https://www.bfu.bg/bg/novini/maystorski-klas-v-bsu-na-tema-nauka-za-dannite • Masterclass implemented during the students’ visit in CERN: https://www.bfu.bg/bg/novini/studenti-ot-tsitn-v-izledovatelskite-tsentrove-cern-i-iter • Practical master classes for Students from MA specialties "Forensic Engineering and Technical Safety", "Integrated Computer Systems and Complexes" and "Engineering and Operation of Energy Systems" were implemented by experts from The Central Institute of Space Research, the Institute of Space Studies, the Institute of Information and Communication Technologies at the Bulgarian Academy of Sciences, as well as the largest data processing and storage center in Bulgaria – EQUINIX: https://www.bfu.bg/bg/novini/studenti-ot-bsu-se-dokosnaha-do-nay-savremennite-it-tehnologii • Master classes „High Performance Computing” for the students from MA "Integrated Computer Systems and Complexes" implemented by experts from Hewlett-Packard Enterprise - Bulgaria: https://www.bfu.bg/bg/novini/hewlett-packard-v-bsu • Master classes for the student from Faculty of business studies conducted by experts from National Statistical Institute https://www.bfu.bg/bg/sabitiya/natsionalniyat-statisticheski-institut-s-prezentatsiya-v-bsu

Table 4. BFU: TEL realization through collaboration with the industry best practice

2.3. Best Practices: Finland

Title:	Implementation of the Electronic Examination System at UTU
Organization:	University of Turku (UTU), Finland
Category:	Realization
Short Description:	The Electronic Examination Service of the University of Turku offers the possibility to take book and course exams as well as maturity tests as e-exams in specific exam rooms. In the main campus in Turku there are three rooms and in distance campuses Pori, Rauma and Vaasa there are one in each. Exam rooms are equipped with electronic entry access control and video surveillance. Support system and guides are available for both for teachers and students. The system supports realization of student-centred approach in education, as students are able to demonstrate their knowledge at their own place, bearing in mind the general timeframe set by the teacher and curricula. Development of electronic examination systems is also one of the key goals set by the Finnish government for digitalization of education.
Process description:	<p>Describe how the process works, especially the steps taken and the goal of each step.</p> <p>The new electronic examination system was introduced to be taken to use in autumn of 2018 by Rector’s Decision given at 31. October 2017. In the Decision the stages of system implementation were stated, each explained here in the following.</p> <p>Firstly, in order to organize the implementation of the Exam system in the units and support for the teaching staff, Exam support persons were appointed. The support persons’ tasks were to be organized on the unit level in a functional way, e.g. in a work pair or a small team.</p> <p>In specific, there are the following:</p> <ul style="list-style-type: none"> -The Exam support persons and main user agree on the system’s implementation schedule, piloting and support in each unit. - The support persons guide and support the teaching staff in the use of the Exam system in a manner and timetable which are suitable for the unit. - The support persons and main user meet regularly to discuss the system’s needs for development and decide on how the improvements are carried out.

The support persons' work is supported with training and workshops on the use of the Exam system both during the introduction and production phase. The general Exam manual and other training material, collaboration forum of the support persons, and the personal support of the main user of the Exam system (email and telephone) are available for the support persons.

The teaching staff draws up and publishes their own exams in the Exam system. The teaching staff can seek guidance and support from the unit's support person, from the Exam instruction manuals as well as from the system's centralized support service at exam@utu.fi. With the mentioned Rector's decision on the implementation of the Exam system, the maturity test practices were also standardized at the University of Turku starting from 1 January 2018.

Secondly, an Examiners Guide was created for teachers. In a web portal, teachers are acquainted with what kind of exams fit best the electronic examination system. The Guide includes: Exam types and creating new exam, creating exam structure and questions, publishing the exam, exam assessment and editing, re-opening and copying exams. In addition, a Guide for students was created. The Guide consist of: how to reserve and change a reservation for exam, where are the exam rooms, taking an exam in the electronic system.

In particular, the process of electronic examination at the user level is defined and is as follows:

1. Teacher creates the exam in the system and activates it (Note! Use Firefox- or Chrome browser)
2. Student makes a reservation in the exam room system
3. Student receives an automatic reservation confirmation email
4. Student goes to the exam room and takes the exam
5. When the student submits the exam, the teacher receives an automatic email about the response once a week
6. Teacher assesses the answers in the Exam -system
7. Student can get an email once the exam has been evaluated in the electronic exam service and the student can view grades in the Exam "Study attainments" page.

Thirdly, technical specs were defined. Every exam question can include attachments in pdf-, Exel, Word, Dia, Inkscape or RStudio - format. The student may either write their answers in the Exam answer editor or

	with the accessible software. It is possible to choose special characters or insert a table in the answer editor using the tools in the editor. At the moment, mathematical formulae can be written using the TeX tool of the answer editor. The system can be reached using the computers in the exam room, and the student also has access to Word, Excel, Paint, Dia, Inkscape, RStudio, Notepad, PDF saving and reader program, and a basic calculator.
Stakeholders:	Teachers, students, IT-support personnel, national IT-support for higher education system
Timeline:	The implementation took approx. 2 years from the planning to the set deadline of using in examination.
Resources:	Online manuals, facilities (rooms, computers, access control, video surveillance, internet, software), support personnel, data management system.
Measurements:	The use of electronic examination is measured annually (e.g. with the percentage of examinations taken traditionally and electronically).
Contribution to Organizational policies:	The implementation of the electronic examination at the university was straightforward and all levels of the organization involved in examinations (management, teachers, administration, it-support, students) took part in the implementation.
Advantages:	Students can proceed to examination at their own pace. The electronic examination is also considered as a low threshold service for students with disabilities or with special needs (e.g. with problems in hearing, concentration, social anxiety).
Limitations:	Electronic examination is best for exams where the questions do not have to be same for all the students. The teacher creates a question bank to the system by creating groups of questions. The system then provides each student with a random question from each group of questions. In this way, each student gets a randomized combination of questions.
More information:	<p>General description: https://www.utu.fi/en/unit/university-services/academic-and-student-affairs/educational-support-services/technology/electronic-examination/Pages/home.aspx</p> <p>Specific description: links that are only available in the university intranet for the internal stakeholders.</p>

Table 5. UTU: Electronic examination system best practice

Title:	Electronic Thesis Process at the UTU
Organisation:	University of Turku (UTU), Finland
Category:	Realization/Other: Guide on how to realize and perform thesis process in an electronic system at the university.
Short Description:	UTUGradu is an electronic thesis process for the higher academic degree. The process includes an electronic originality check (plagiarism detection), examination and approval process, electronic publication, and electronic archiving. By using the system, all higher academic degree theses (Master's) are made electronically available, meaning theses will no longer be printed and the availability of theses improves significantly. The system has also additional benefits: it ensures long-term storage of theses, the approval process of theses will become more standardized, and examiners and approvers can always access the same document which will also be archived in the University Library's publication repository. The case describes a Guide of the process of electronic thesis submission in the data system.
Process description:	<p>The Guide on the process of electronic thesis submission is split into six stages and are as follows:</p> <ol style="list-style-type: none"> 1. The supervisor initiates the examination and publication process of a thesis with the UTUGradu thesis form when the supervisor and student(s) have together agreed that the thesis is finished, meaning changes will no longer be made to it. On the form, the supervisor selects the student(s) and the Moodle course where the student submits their thesis for examination. <p>NB! After initiating the UTUGradu process, the contents of the work cannot be changed without starting the process again (compare to submitting a printed thesis for examination). Hence, the UTUGradu system should not be used as a tool for supervising and pre-examining a thesis.</p> <ul style="list-style-type: none"> ▶ Student receives an email from the system. <ol style="list-style-type: none"> 2. The student converts their completed thesis into a PDF/A file suitable for long-term storage, checks it with the PDF/A validator and then submits the same file for the Turnitin originality check in the above-mentioned Moodle course area. After this, the student fills in the bibliographic and publication information of their thesis on the UTUGradu thesis form.

NB! By confirming the information on the form, the student accepts the submission of their thesis for examination and publication and can no longer make changes to the work on their own initiative.

► Supervisor receives an email from the system.

3. The supervisor analyses the Turnitin report of the thesis on Moodle, approves the Turnitin originality check and information on the UTUGradu form filled in by the student, and adds the examiner(s) and the approver (Head of Department/Dean) for the work.

NB! If the supervisor also acts as an examiner of the thesis, they must add themselves as an examiner on the form.

► Examiners receive an email from the system.

4. The examiners download the thesis file from the form and give their evaluation statements with the UTUGradu thesis form within four weeks of receiving the email notification of the thesis being ready for examination (during June-August and December the evaluation period can be longer).

NB! If the examiners give a joint statement, they both still have to fill in the statement on the form.

► Student receives an email from the system.

5. The student(s) reads the statements and makes a possible appeal with the UTUGradu thesis form, forwards the form to the approver of the work within seven days of receiving an email notification of the examiner's evaluation statement.

► Approver of the thesis receives an email from the system.

6. The approver (Head of Department/Dean) receives the thesis file, the evaluation statements of the examiners and the possible appeal of the student and decides on further actions according to the options on the form (in other words, gives the final grade for the work).

- Student receives a notification of the evaluation.
- The system sends the information for registering the study attainment to the student administration of the faculty.

If the thesis receives a passing grade, the thesis document with its bibliographic information is transferred to the Library for archiving and publication.

	<p>If the student has chosen open publication as the manner of publication on the form, their entire thesis will be published in the open publication repository UTUPub available online. The abstract of the thesis will be published in the UTUPub regardless of the manner of publication. The student can also change the manner of publication later by sending an email to the Library to a specific email address (julkaisut@utu.fi).</p>
Stakeholders:	<p>Teachers offer counselling for students in their thesis process.</p> <p>Students prepare their thesis according to instructions and in the case of use of the electronic system, following the Guide on UTUGradu.</p> <p>IT Services is in charge of the planning and realization of the technical environment.</p> <p>Educational Affairs is responsible for planning the introduction (customer service and trainings) and for the electronic originality check as part of the process.</p> <p>Library is responsible for verifying the bibliographic information and transferring the theses to the publication repository UTUPub.</p>
Timeline:	<p>Following the overall timeline of the Master's thesis, which usually takes place between the 4th and 5th study year. Each student follows the required courses and sets a personal timeframe for their thesis process.</p>
Resources:	<p>Electronic platform, software, personnel (teachers, students, IT-services, administration, library).</p>
Measurements:	<p>The use of the electronic system is measured annually (percentage of use compared to traditional submission of thesis).</p>
Contribution to Organizational policies:	<p>The system aids in standardization of the thesis process submission. All stakeholders are given information in the guide, including heads of departments/deans, and student administration. Specific instructions are given for supervisor, student and the examiner. The system contributes to the overall aim of the university on open access to research and the national aim on digitalization of education, including electronic examination or development of electronic assessment in education</p>
Advantages:	<p>Following the principle of open access to research, all higher academic degree theses (Master's) are made electronically available for the academic community and the general public. From the viewpoint of Quality Assurance, the system enables long-term storage of theses. Plagiarism control is embedded in the system. The system also supports standardization of the approval process of theses. From the data</p>

	management and archiving viewpoint, all the examiners and approvers can always access the same document. Furthermore, the processed thesis will also be archived in the Library’s publication repository for easy access for all potential users.
Limitations:	-
More information:	https://www.utupub.fi/

Table 6. UTU: Electronic theses best practice

2.4. Best Practices: Greece

Title:	Virtual Course Meetings
Organization:	Hellenic Open University, Greece
Category:	Realization: realize and perform the TEL course including support and assessment
Short Description:	During the running of a course, 5 virtual meetings take place during the academic year between the tutor and the students of its class (which is comprised of up to 30 learners). This meeting lasts 4 hours and specific aspects of the course are covered. This meeting has an actual goal to solve learner questions and problems but it usually covers a specific part of the course (teaching rather than solving questions). These meetings were usually realized in face to face sessions but the last 3 years, a large number of classes are performing the meeting exclusively virtually.
Process description:	<p>Virtual meetings are four-hour seminars that are held five times (for annual courses) and three times (for semi-annuals) during a course and form, along with projects, the cornerstones of the teacher’s teaching and the relationship he / she forms with the students.</p> <p>During the meeting, the tutors ensures that the study course is maintained as smoothly as possible and communicates as well as the students as well as the students to each other. Specifically: it informs the students about the objectives and the way the programme works as well as how to study the teaching material, checks that all students have received the teaching material (otherwise notifies the relevant department of HOU), informs them about sources of additional information (e.g. web pages, brochures, etc.) on the subject of course, which may be useful in both their study and preparation and prepare them for the exams.</p>

	<p>In general, the meetings can be searched online at a dedicated IS system (http://open.eap.gr). They are not compulsory, but attendance has proved very important since tutors help to clarify unclear points and make the student understand the subject in depth. Also, during these meetings, the tutor learner and learner – learner relationships develops.</p> <p>Tutors use power point presentations during the meetings. Video feed from the tutor side is encouraged so as learners get familiar with their tutor. On-line chat, poles, desktop sharing functions and session recording are also available.</p>
Stakeholders:	<p>Tutor</p> <p>Learners</p> <p>Technical Department (responsible for support, if and when needed)</p> <p>Learner Department (responsible for setting the dates of the meetings so as meetings of different courses do not overlap)</p>
Timeline:	<p>Meetings are set at the start of the academic year</p> <p>Meeting invitations are sent automatically by the system a few days before the actual date of the meeting</p> <p>Tutors usually upload the material used in the meeting at the HOU VLE a few days after the meeting.</p> <p>A report recording who attended the meeting is send through an automatic system (for statistical purposes) usually within one week after the meeting.</p> <p>A report with the minutes of the meeting is send from the tutor to the class coordinator usually within one week after the meeting.</p> <p>The attendance of meetings is used for evaluating the tutor at the end of the academic year (data are sent automatically between IS that handle attendance and evaluation).</p>
Resources:	<p>1 tutor per class</p> <p>Skype for Business for tutor and learners (provided by the Institution)</p> <p>Software and hardware infrastructure is provided by the service provider (Microsoft).</p>
Measurements:	<p>Session attendance is recorded and submitted using a dedicated IS.</p>

	During the evaluation of the course (at the end of the academic year) learners are asked to assess the virtual meetings in terms of objectives accomplished, tutor ability to transfer knowledge and solve questions.
Contribution to Organizational policies:	HOU is an open University so the model of virtual teaching is within its scope. Virtual meetings are easier to organize and reduce costs. Educationally, they have some shortcomings sine the relationship between tutor-learner is weaker.
Advantages:	Meetings can be recorded and revisited by the students. The institution saves money since travel costs and meeting room renting are reduced. Learners save money and have more time for studying.
Limitations:	In practice, the lack of real-life interaction between learner-tutor has proven to affect learner participation. Learners participate less actively in a virtual meeting (less questions are asked, learners are passive, dynamic collaboration in solving problems is difficult). Tutors need to be carefully prepared with material that makes up for this loss of dynamic collaboration (i.e. presentations with animations). Generally, virtual meetings are considered more difficult than face to face meetings and tutors need to have some experience to perform these meetings well.
More information:	Michalis Xenos: The Future of Virtual Classroom: Using Existing Features to Move Beyond Traditional Classroom Limitations. IMCL 2017: 944-951 Michalis Nik Xenos, Thrasyvoulos Tsiatsos, Bill Vassiliadis: Large-scale deployment of distance education in computer science at the Hellenic Open University. IJKL 4(2/3): 285-297 (2008) HOU's VLE at https://study.eap.gr/login/index.php HOU's Attendance management system at https://open.eap.gr:10042/wps/portal!/ut/p/z0/04_Sj9CPykssy0xPLMnMz0vMAflj8nKt8jNTrMoLivV88tMz8_QLsh0VAZSk7Xs!/?

Table 7. HOU: Virtual course meeting best practice

Title:	Evaluation
Organisation:	Hellenic Open University, Greece
Category:	Evaluation
Short Description:	<p>The evaluation of tutors, course coordinators, educational material and HOU administrative services takes place each year by making use of a dedicated information system (Electronic Assessment System).</p> <p>The Evaluation Unit of HOU (MEAE) derives its e-evaluation data by producing its annual report entitled e-Evaluation Report. The report is produced after the end of the e-evaluation and the results are communicated to the Administration of HOU. Also, sections of the report concerning specific Curricula are communicated to the Deans of the Schools to which they belong and as well as to the Directors of the respective programs.</p>
Process description:	<p>Tutor’s Evaluation by Learners</p> <p>From the beginning of April until mid-May, the Electronic Assessment System is available to students of all the Schools of the HEI. Student participation is voluntary and anonymous. Learners score contributes to the 65% on the total annual score of tutors.</p> <p>Learners are invited to evaluate tutors, the thematic unit organization, the administrative services and logistical infrastructure, as well as the educational material published or produced by the HEI. Upon entering the evaluation information system, students are asked to fill out a formatted questionnaire with open-ended and closed-ended questions. From 2012-2013 a new questionnaire was designed in accordance with the model of the Quality Assurance Authority in Higher Education (ADIP) as well as the proposals of all Schools, administrations and students.</p> <p>MEAE regularly reminds students, by e-mail, their participation in the assessment. It also provides the necessary support to users to successfully complete their evaluation.</p> <p>Tutor’s evaluation by Course Coordinators</p> <p>The tutors are also evaluated by the coordinators. The participation of the coordinators is compulsory and their</p>

assessment contributes a 35% in the calculation of tutors' final grade.

The coordinator enters the Electronic Assessment System and through the "Coordinator Tutor Assessment" service evaluates the teaching staff of the module he coordinates. In addition, the coordinator submits a form which provides justification for this evaluation.

MEAE periodically reminds the coordinators, by email, of their participation in the evaluation. It also provides the necessary support to users to successfully complete their evaluation.

Course Coordinator's evaluation by Tutors and Programme Director's from Course Coordinators

Beginning 2012-2013, the Online Assessment System has been supporting a new assessment activity entitled 'Assessment of Curriculum Managers & Coordinators'. Participation in the evaluation takes place from the beginning of April until the middle of May and is mandatory for every participant (teachers, coordinators and curriculum managers). Through this evaluation activity the tutor can evaluate the coordinator of the module, the coordinator can evaluate the Curriculum Director, and finally the Director can evaluate the coordinator.

The evaluation is anonymous. In each case of evaluation the evaluator is provided with a set of axes and criteria in which to provide comments with the aim of highlighting points for improvement either in the coordination of a topic or in the direction of a curriculum. The evaluation axes used are:

Axes of Directors' Evaluation by the Coordinators:

- Management and Operation
- Academic Development
- Communication

Axes of Evaluation of the Coordinators of the Divisions by the Directors of the programmes:

- Administration and Operation
- Academic Development
- Moderator Communication and Feedback

Axes of Evaluation of Coordinators by tutors:

- Administration and Operation
- Academic Development
- Communication

MEAE periodically reminds evaluators, by e-mail, of their involvement in the evaluation. It also provides the necessary support to users to successfully complete their evaluation.

Evaluation of educational material by tutors and learners.

Tutor evaluation of teaching material worked for the first time in academic year 2014-2015. The evaluation is anonymous and is carried out by an appropriate questionnaire suggested by the MEAE, which was created after a study of the Unit following an internal consultation with the Schools and its approval by the MEAE Scientific Committee.

This service has been fully developed and integrated into the MEAE Information System and is automatically initialized based on data from each academic year evaluation. The retention of historical evaluation data has already been designed and implemented in an initial release, and its completion is a future activity of the Unit.

Reporting

The results of the evaluation actions are made available in early August in accordance with the timetable approved by the Management Committee.

More specifically, the report includes the following:

- Information on tutor evaluation, how to conduct the assessment, and conclusions.
- Brief suggestions on the evaluation process and its relationship to the selection of tutors.
- The basic statistical measures reported in the report.
- Presentation of results at School level.
- Presentation of results at Curriculum level.
- The detailed presentation of the results for each Curriculum.

	<p>There are also three annexes which present:</p> <ul style="list-style-type: none"> ▪ Abbreviations. ▪ The questionnaire used for electronic evaluation by students. ▪ Short User Guides for Online Evaluation System Services. <p>The existence of Thematic Modules taught in more than one MS leads to two different approaches to the measurement of evaluation statistics. In particular, the first approach, according to which the evaluation report is created, considers that only the learners attending them are considered. On the other hand, the second approach takes into account all students belonging to a programme.</p> <p>The Evaluation Reports are sent to the HEI's Management. Parts of this report are also sent to the Deans of the Schools and to the Directors of Faculties.</p> <p>The results of the report are presented at the following levels:</p> <ul style="list-style-type: none"> ▪ Evaluation of educational material at course level ▪ Evaluation of educational material at School level ▪ Evaluation of educational material at Programme level <p>Specifically, the quality of educational books published or produced by HOU is recorded, through their evaluation by teachers, which may lead to further actions of updating the printed educational material.</p> <p>The following information is presented in detail:</p> <ul style="list-style-type: none"> ▪ The number of participants. ▪ The average price of textbooks. ▪ Comparative presentation of tutor and learner evaluation. <p>Training</p> <p>Improvement based on training is provided by specialised MOOCs.</p>
Stakeholders:	Learners

	<p>Tutors</p> <p>Course Coordinators</p> <p>Programme Directors</p> <p>HOU Management</p> <p>Evaluation Unit</p>
Timeline:	April-August of each academic year
Resources:	<p>Evaluation Information System</p> <p>Personnel of the Evaluation Unit</p>
Measurements:	During the evaluation of the course (at the end of the academic year) learners are asked to assess the virtual meetings in terms of objectives accomplished, tutor ability to transfer knowledge and solve questions.
Contribution to Organizational policies:	HOU was the first Greek HEI to organize and operate a complete automated evaluation system. Tutor evaluation greatly affects whether their contracts will be renewed. This serves the strategic goal of HOU to invest on quality.
Advantages:	<p>Corrective actions are based on hard evidence.</p> <p>Continuous evaluation that affects employment status leads to the need for continuous improvement.</p>
Limitations:	Low participation of learners to the evaluation process (less than 25% of the total population) leads to automatic evaluation.
More information:	<p>Evaluation Unit: http://meae.eap.gr/</p> <p>Evaluation Information System: http://axiologisi.eap.gr/eval/main/index.php?r=site/login</p> <p>Evaluation's unit training MOOC: https://mooc.eap.gr/</p>

Table 8. HOU: Evaluation best practice

2.5. Best Practices: Italy

Title:	A technological enhanced self-assessment activity for students
Organization:	Università degli Studi Guglielmo Marconi (USGM) - Italy
Category:	Realization: realize and perform the TEL course including support and assessment Evaluation: define, run and analyze the evaluation and improve the TEL course
Short Description:	Starting from a simple tool as a Multiplier Answer Questionnaire, USGM developed a very useful self-assessment activity whose results can be crucial both for students and instructors. The IT-architecture built up around the questionnaire transforms this tool into a powerful learning object inside the Learning Management System, i.e. in the context of distance learning.
Process description:	<p>In 2014 Prof Matteo Martini and Prof. Fabrizio Fontana, developed a set of self-assessment activities for students, that has important implications also in the Quality Assurance System of the University. This set has been created with the intent of tackling two main issues that the University was facing at that time:</p> <ol style="list-style-type: none"> 1. the university drop-out rate, mainly occurring at the first year, that is a common phenomenon for all kind of HEIs, both “traditional” and a distance-learning university. 2. the need of measuring lessons’ quality in terms of lessons’ usability and the time needed for students to take the exam, which mainly concerns the distance teaching universities. <p>The two professors decided to adopt a Multiple Answer Questionnaire as starting point of a series of tools to be used by the students and the instructors in order to lay firmer basis both in the students’ study-method and autonomy and in the quality of learning objects and teaching. This set of self-assessment activities has been applied first to the General Physics first year course, where students can access to a Multiple Answer Questionnaire both during the “reading period” and before the final exam. The proposed test is composed by 15 questions with 4 possible answers, only one is correct. The test is considered passed if more than 11 answers are correct (more than 70%). Passing the test do not ensure any advantage during the final exam and at the same time students who don’t pass it can even decide to take the final exam. For this reason, learning tools like this are strongly suggested by instructors but they are not mandatory to pass the exam. To ensure always different tests, the instructors have realized a database of 500</p>

questions from which the 15 questions of the single questionnaire are randomly selected. Each question is identified by a code that permits subject's selection. In the case of Physics courses, the two professors decided to give to students the possibility to choose among 3 main areas/possibilities:

- Test on first course part: Mechanics and Thermodynamics
- Test on second course part: Electromagnetism and Optics
- Test on the entire program

Once selected one of this options, the test starts and the procedure submits one question a time on screen. The maximum time to answer has been fixed to 3 minutes. After completed the 15 questions, the student is redirect to the "report" page where he or she can have a look to the given answers together with the correct and wrong indications. Then students have the possibility to click on a "send email" button, through which they can send an email to themselves in order to have an activity record and also to the teachers. Sending the report to the instructors is left optional, however, in case of not passed tests a pop-up suggesting to use this feature is visualized.

When the teacher receives the report, his/her task is to contact the student, to explain errors, indicate course subjects not fully understood and suggest additional readings and materials. Using this tool, students have an objective assessment of their knowledge and understanding and at the same time they can establish a communication indirectly with their instructors.

This system has crucial influence in 2 main University processes, affecting:

1. Students' preparation
2. Teaching quality

1. By given this possibility to self-assess his/her own preparation, allows the students to measure their progresses not just before the final exam but during the entire study period. Once identified a difficulty on a sub-part of the study program, students can exchange mails and suggestions with instructors, correct their study and/or focusing on specific subjects before going ahead with the study. This is particularly important for first year students that usually have not yet acquired a sufficient autonomy to understand how to evaluate their preparation and having the possibility to confront themselves with instructors on the basis of the answers given, provides them with useful tools to build

	<p>and follow a new fruitful study-method and to organize their work autonomously.</p> <p>2. Considering the quality of teaching, the real added value of this learning tool is in the database added in which the entire set of completed questionnaires is stored. The database can be exploited to perform statistical analysis on the entire students' community, allowing, for instance, to point out hard-understandable topics, identified by simple and well-defined quality parameters. Results of this analysis can be an important guide for instructors that can use these evidences to integrate/change and modify learning materials.</p> <p>Currently this methodology has been transferred and adopted by all the courses at USGM. All Professors have to provide at least 100 questions in order to develop the questionnaires for the database and to give students the opportunity of taking always different questionnaires.</p>
Stakeholders:	Throughout the whole process the stakeholders involved are students, instructors, professors, administrative staff, technicians
Timeline:	-
Resources:	<p>When the Database has been developed for the first time the personnel involved was:</p> <p>1 Graphic designer, 1 instructional designer, 2 programmers and the professors of the course.</p> <p>The costs are mainly those related to the staff and the server used for developing the database.</p>
Measurements:	<p>Data collection through this Database allows any kind of statistical analysis so it can be used to investigate and improve many areas of academic work. In particular we have data about the time taken to take the Physics exam by the students. The Physics exam is an annuity, which means that students should take it within the 1st year of the course. Measuring the latency time before and after the introduction of the Martini's and Fontana's set of self-assessment activities, we found out that this time has dropped significantly. Before the Database and the self-assessment adoption, 22% of the students took more than 2 years to take the exam. After its adoption this percentage declined to 10%.</p>
Contribution to Organisational policies:	As already highlighted, this kind of self-assessment activity has a double role, being useful for both students and instructors. Adding to this learning tool a database to collect completed tests allows to follow directly the progress of each student and also to provide, through a

	specific data mining, an objective and precise quality parameter for learning material.
Advantages:	<p>The main advantage is that setting this “simple” self-assessment tool within the University LMS permits to tackle and improve a crucial aspect of TEL courses, that is the potential limited communication between students and teachers. Creating a personal communication between the student and the teachers on a specific study program, allows them to receive feedbacks and suggestions on the study methods and the course contents respectively.</p> <p>Moreover, the professors are free to adjust the questions of the questionnaire however they wish, for instance setting the time for the answers, using written answers or even images, pictures, that is useful in particular for Arts courses.</p> <p>Each time a student fills the questionnaires the Professors receives an email informing him/her. This allows him/her to follow the student individually, identifying the initial lacks and the improvement path taken by the student.</p> <p>The professors can also follow the entire class, detecting potential hard topics, that can be further discussed and explained in a clearer way.</p>
Limitations:	At present the Database can be difficult to be used at its best potential by persons who are not experts in Statistics and in interpreting statistical data.
More information:	<p>Martini M, Fontana F (2015). A technological enhanced self-assessment activity to reduce university drop-out. FORMAMENTE, vol. 2015/3-4, ISSN: 1970-7118</p> <p>https://formamente.quideassociation.org/wp-content/uploads/2015-3-4/2015_3_4_02_Martini_Fontana.pdf</p>

Table 9. USGM: Self-assessment for student best practice

Title:	Advanced and differentiated multimedia-based learning contents production
Organization:	Università degli Studi Guglielmo Marconi (USGM)
Category:	Design: conceptualize and design TEL courses
Short Description:	The Multimedia and creative production process at USGM takes into account the significant added value of an extremely differentiated multimedia contents production. Here we'll describe the process of Educational Multimedia Production and the various technological products the University offers to students.
Process description:	<p>Marconi University - thanks to the decisive contribution of its teaching staff - has always been committed to researching and applying innovative technological and educational models as well as designing and developing various types of advanced multimedia-based teaching methods which are subject specific and personalized in view of diversified learning contents and objectives. As such, Marconi University can make a meaningful contribution to the ongoing debate on the state of the art as regards distance education thanks to the wide and diversified range of experiences and practices it has developed in respect of the creation/fruition of learning objects which are intended for university teaching/learning.</p> <p>The most important learning content is constituted by the video lessons. These are 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.</p> <p>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.</p> <p>Within educational courses at a distance, video/audiolessons make it possible to achieve the following objectives:</p>

- ✓ 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.).

Then a range of other learning products are considered pivotal to provide additional and complementary tools which strengthen other educational aspects such as interactive, collaborative and experiential didactics.

Multimedia Case Studies: A case study is a history that has a strong educational meaning and it is developed in a narrative form, so as to put the learner in a real or plausible situation, in which, after a careful analysis of the situations presented, they are required to formulate an interpretative hypothesis to take appropriate decisions for the resolution of the case.

The main purpose of the case study is to place the participant in front of scenarios very close to plausible situations, presenting real-world problems and generating forms of located learning. A case study, therefore, does not present general theories, but practical situations in which to apply and verify the validity of the theories previously assimilated.

This object is very useful when one wants to test the learner in their ability to set priorities, develop strategic plans, make decisions, and apply theories and principles.

Another effective tool for teaching/learning in this new «educational» framework is represented by **simulations and serious games**.

In the *gamification* process:

- the activity can be learnt easily;
- the actions of the player can be measured and evaluated;
- feedback can be given to the player in a timely fashion;
- the objectives requested are short or mid-term;
- the management of resources is one of the capacities requested;
- acquisition of a positive reinforcement as a reward.

By interactively exploiting and mixing enjoyment in an intelligent way, *gamification* can become a very effective way to channel messages and introduce active behavior. In order to favour these performances, the game must promote the creation and narration of interesting plots through appropriate avatars, intended as imaginary alter-egos of the user, by keeping in mind that the game is structured on the achievement of a solution where there is a challenge to face and a problem to solve. The ludic interaction allows the user to view common situations from different perspectives. Among the new and more complex products linked to *gamification*, there are Alternative Reality Games (ARG), which are experiences that require various media types to involve the highest number of users based on the resolution of enigmas within a boundary between game and reality.

Nevertheless, the introduction of *gamification* techniques in educational practices isn't difficult, in that we need to consider:

- the very high development costs and the market share for the producers;
- the resistance to innovation by educational institutions;
- schools which are reluctant to substitute the traditional manual didactics;
- the prejudices of the educational community;

- the difficulty of evaluating *ludic* learning;
- the different access to computing devices than can notably vary from one institution to another as well as from one area to another.

In particular, we'll see a presentation of a *serious game* based on simulation and *role playing* designed and developed for students enrolled in the "Corporate Finance" course; this game allows the students to apply the rules and practices which are typically deployed by modern businesses in the management of economic and financial transactions.

Multi-disciplinary paths are represented in an effective way and through different media (3D environments, audio/video contributions, photos, illustrations, static and/or animated graphic etc..) the most relevant content from a didactic path and a deep study on specific topics. Often we talk about inter and intra- disciplinary, that is didactic objects, which due to its multidisciplinary dimension, deal with a transversal way of specific thematic aspects.

Within asynchronous distance-learning, the offer of multimedia paths has the objective of:

- ✓ focus attention on the most distinctive traits of discipline and on its insights;
- ✓ stimulate the curiosity and the interest of the learner through the use of a "multi-sensory" and "multi-experiential" approach;
- ✓ encourage the learner to conceptual elaborations of greater value than the simple programming concepts, data, concepts and principles;
- ✓ add to the enjoyment of the typical "formal learning" (structured educational paths) that semi-structured or completely free on of the "informal learning", by which the free consultation and free readapting/fulfilment of knowledge can facilitate personalised and creative learning.

Virtual Classrooms 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.

The available tools in Virtual Classroom are:

- chat and videochat
- sharing PC screens (used by the teacher) with the possibility of co-sharing (sharing files and documents) and co-browsing (sharing online navigation)
- whiteboards, a real virtual board which allows the reproduction of graphics, formulas and so on...
- questionnaire, for students of multiple questions or multiple choice

registration function, which makes possible the broadcast option allowing students to do a revision and rebroadcast inside other learning paths

Virtual Laboratories: the method used can foster

- planning and group activities, problem solving, autonomy and self-assessment and collaboration;
- experimental activity can be situational and not linked to pre-established conditions;
- from the visual perspective, it is necessary to create a pleasant and fascinating experimenting set, which facilitates the achievement of the learning outcomes.

Stakeholders: Teachers, instructional designers, graphic designers, audio and video technicians, Faculty Directors for the Educational Multimedia Production, Multimedia for creative and educational production office

Timeline: -

Resources: University Marconi has established an internal sector for didactic multimedia production which takes into account different professional figures:

- instructional designers specialized in e-learning techniques and who support teachers in the design phase
- experts in the field of various disciplinary areas together with content editors/mangers for the preparation of didactic materials

	<ul style="list-style-type: none"> • 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.
Measurements:	Not applicable
Contribution to Organisational policies:	This wide range of multimedia learning contents provides the students with the possibility of different kinds of learning: not just the video-audio lesson and the script notes but he/she has also the opportunity to put in practice what he/she is learning through other learning methods, for instance, the Virtual Laboratories. This makes the learning path innovative, more interactive, collaborative and attractive to students, increasing the quality of teaching/learning.
Advantages:	<i>See the previous paragraph</i>
Limitations:	No limitations
More information:	

Table 10. USGM: Multimedia content production best practice

3. TEL Roadmap

3.1. Basic principles

The roadmap is largely based on ESG and on the conclusions drawn from D1.1. The goal is to adopt a balanced, systemic approach that into account pedagogical, technical, administrative and managerial aspects of quality. Furthermore, in compliance with ESG guidelines, the roadmap follows four principles for quality assurance for TE:

- Higher education institutions have primary responsibility for the quality of their provision and its assurance. This means that they must dedicate the appropriate resources in terms of structures, personnel, processes, methodologies, training and IT support.
- Quality assurance responds to the diversity of higher education systems, institutions, programmes and students. This means that specific requirements on TEL must be taken into account. The situation as far as the needs are concerned differs (the survey identified a few clusters of KZ HEIs with similar needs).
- Quality assurance supports the development of a quality culture. This is confirmed since it is an important result of the survey. The strategic objectives of the roadmap should reinforce TEL quality in particular.
- Quality assurance takes into account the needs and expectations of students, all other stakeholders and society. Another important aspect that was stressed by stakeholder and HEI staff in the survey where practical solutions were proposed.

The roadmap sets goals on 4 strategic axes, as depicted in the following figure.

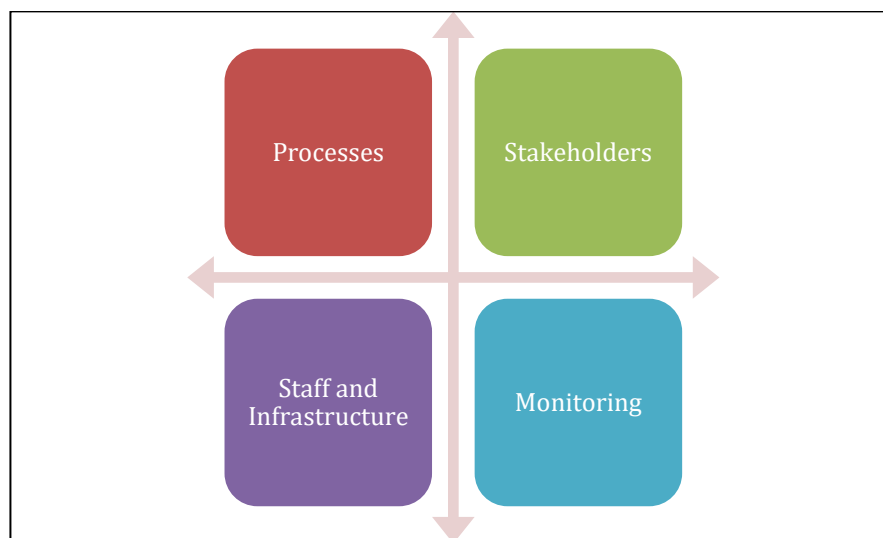


Figure 1. Roadmap axes.

3.2. Strategic goals

The strategic goals of the roadmap are described along with indicative outcome indicators, recommendations for appropriate actions and risks.

Strategic Goal 1- SG1. The Quality Assurance policy/standard specifically for TEL should be adopted and be a part of the Institutional Strategy.

Outcome indicators:

- Increase HEI staff trained in TEL QA practices.
- Amend current QA practice with TEL -specific processes.
- Improve general awareness of TEL QA goals and procedures.
- Increase number of TEL courses and enrolled students.
- Increase structures (units, departments) and actions (events, training sessions, publications) related to TEL QA.

Recommendation

- Integrate/align TEL QA to main QA policy.
- Make the TEL QA policy public.
- Provide training for HEI staff.
- Assess the readiness of staff for applying the policy.
- Link HEIs institutional objectives to QA TEL policy.
- Increase funding for TEL QA.
- Design cost-effective and practical processes.

Risks:

- Low funding.
- Guidelines and standards too general.
- Management does not fully adopt TEL QA as strategic goal.
- QA processes not aligned with main QA policies.
- Low level of staff engagement.
- Specific HEI needs not successfully identified.
- QA processes are resource consuming or impractical.

Strategic Goal 2- SG2. Involve all relevant parties to the design of the Quality Assurance policy/standard for TEL

Outcome indicators:

- QA TEL design accepted by involved actors.
- QA TEL design practical and straightforward.
- Increased number of committees with stakeholder participation.

Recommendation

- Create processes and structures that select the appropriate actors to participate in the design.
- Involve HEI staff, students and external stakeholders to the design.
- Provide motivation for stakeholder participation to the design phase.
- Continuously assess the involvement of interested parties and make necessary adjustments when needed.
- Provide the methods and tools for efficient design.
- Take into account managerial, educational, sociological, economic, business, technological and pedagogical perspectives.

Risks:

- Low interest from actors.
- Actors not suitable or missing.
- Design tools not suitable or missing.

Strategic Goal 3- SG3. Provide the necessary staff and infrastructure for TEL and TEL QA

Outcome indicators:

- Increased number of personnel occupied in TEL QA.
- Increased funding for personnel recruiting.
- Increased number of institutional experts in TEL QA.
- Appropriate infrastructure operational.
- Student lifecycle management support established.
- VLE established.
- Electronic evaluation of all stakeholders operational.
- Volume of TEL educational material increased.

- Number of training programmes for TEL QA increased.

Recommendation

- Create processes for recruiting/selecting the appropriate staff.
- Establish a VLE for TEL support and evaluation.
- Establish information system for evaluation of learners, tutors and academic processes.
- Design processes to design, develop and evaluate TEL-specific educational material.
- Establish regulations for efficient infrastructure use.
- Design training programmes for TEL QA based on stakeholder needs/capabilities.
- Use/recruit/train staff for training and monitoring of TEL QA.

Risks:

- Technical difficulties in implementing the necessary infrastructure.
- Inadequate funding.
- Guidelines too general or outdated.
- Training programmes not properly designed.

Strategic Goal 4- SG4. Provide continuous monitoring of TEL QA

Outcome indicators:

- Objectives for TEL Programmes review, defined.
- Number of periodical reviews for TEL programmes increased.
- Number of external reviews for TEL programmes increased.
- Database of best practises established.
- Communiques of TEL programme reviews increased.

Recommendation

- Set TEL programmes objectives to respond to the needs of students and society.
- Review and revise TEL programmes regularly, involving students and other stakeholders.
- Adapt TEL programmes to ensure up-to-datedness.
- Communicate review results and revision action plans to all parties involved.
- Use benchmarking (collaborative benchmarking) to record best practices.

- Establish external quality assurance processes for periodic review of TEL programmes.

Risks:

- Review processes and objectives too general.
- Review results not properly communicated to interested parties.
- Adaptation processes time consuming or expensive.
- Lack of appropriate staff for performing internal/external review.

3.3. Mapping of TEL roadmap to ESG

Part 1: Standards and guidelines for internal quality assurance of ESG defines 10 guidelines for internal QA. The roadmap's strategic goals (SG) can be loosely mapped to these guidelines (in a 1 to many relationship) permitting the design of more detailed guidelines for TEL QA. Only strong relationships appear. Figure 2 (next page) presents this mapping. For the labeling of guidelines, the notation of the ESG document is used.

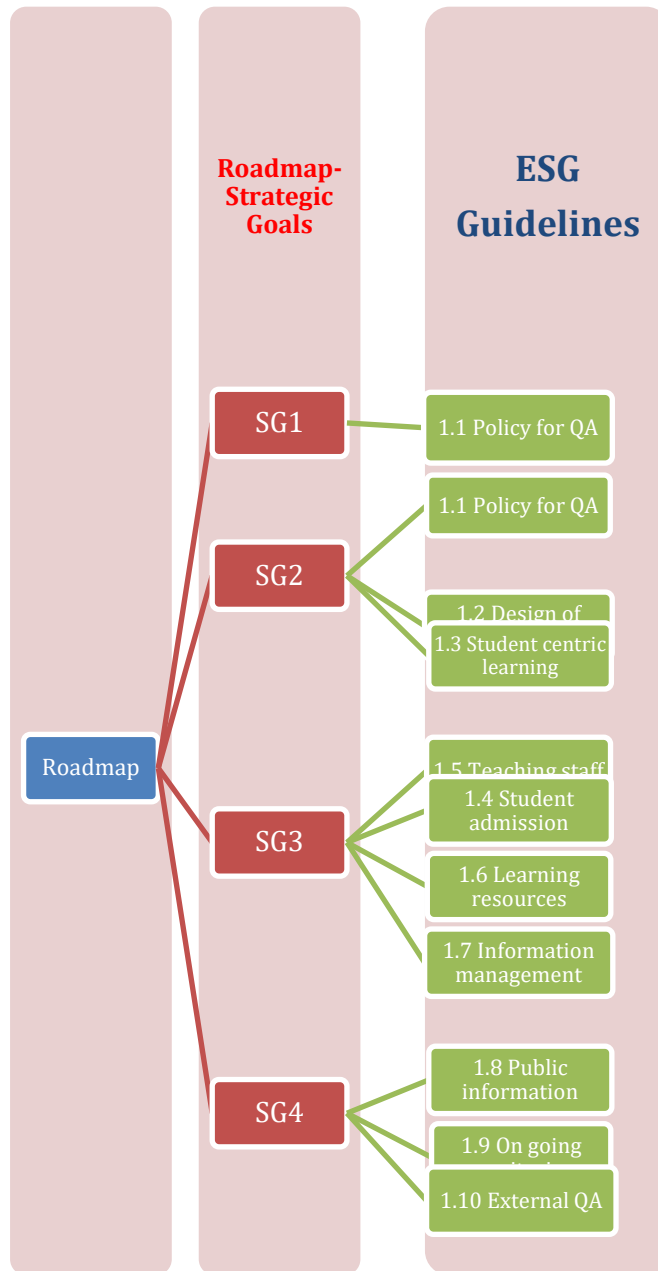


Figure 2. Mapping of Strategic goals to ESG guidelines.