

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

**State of the Art of HE for TEL**

Institutional Report of

University of Turku

&

 National Report of

Finland

# **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** |
| **TEL** | **Technology Enhanced Learning** |
| **VLE** | **Virtual Learning Environment** |

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## **Chapter 1. Institution Information**

* *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 page*

**Name of the partner**

 University of Turku

**Names of respondents, positions, departments**

Timo Halttunen, Unit manager, Brahea Centre

Matti Lappalainen, Senior coordinator, Brahea Centre

**Provide a short introduction describing the methodology you used and the number and types of sources**

University internet and intranet pages, university strategy and action plan, rectors and vice-rectors statutes for curricula development, teaching, Ministry of education and culture intranet pages, government policy plan.

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

* *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*

**Name of the partner**

University of Turku

**Names of respondents, positions, departments**

Timo Halttunen, Head of unit, Brahea-Centre, Areal Research and Development, University of Turku

Matti Lappalainen, Senior coordinator, Brahea-Centre, Areal Research and Development, Univ. of Turku

Leena Strauss, University Lecturer, Institute of Biomedicine, University of Turku

All respondents have been involved in curriculum development activities for decades in institutional and national level. This offered a solid basis for answering.

**Provide a short introduction describing the methodology you used and the number and types of sources**

University internet and intranet pages, university strategy and action plan, rectors and vice-rectors statutes for curricula development, teaching, Ministry of education and culture intranet pages, government policy plan.

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

* *How do you plan the initiation of a course (e.g. needs analysis for demand and constraint identification etc.)*
* *What kind of goals are set in the organizational strategy and other governing documents for overall curriculum planning and development?*
* *Are the needs of working life and the industry somehow described in the governing documents? If they are, please describe, how?*
* *Is TEL/online learning part of the overall strategy for your institution’s development and how?*
* *Do you foresee laboratory activities within curriculum planning?*
* *Which kind of laboratory activities do you use? (e.g. in presence, virtual, remote labs etc.).*
* *In case you use virtual/remote labs can you please describe them in terms of technological infrastructure and pedagogical model applied?*
* *Has the COV-19 pandemic affected your curriculum planning practices? In which way? (please describe any changes that occurred after covid pandemic broke out).*

**How do you plan the initiation of a course (e.g. needs analysis for demand and constraint identification etc.)**

* In preparing the curriculum, feedback is collected from various places. 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.

**What kind of goals are set in the organizational strategy and other governing documents for overall curriculum planning and development?**

* In the Policy Plan of the university strategy, digitalization is one of main objectives. Participation in the national digivision for higher education is encouraged. This entails strengthening the digital learning and teaching environment by e.g. developing digital teaching platforms and educational information resources in collaboration with other organisations. Strengthening teachers and students’ digital competence is also seen as a strategic goal.
* In the vice-rectors statutory letter for curricula planning to faculties, it is stated that emphasis for planning term are a) sustainable development, including UN’s goals on sustainable development, and b) professional life relevance. Faculties are encouraged to strengthen the professional life relevance by involving professional and business life representatives in the curricula planning.

**Are the needs of working life and the industry somehow described in the governing documents? If they are, please describe, how?**

* In the policy plan of the university strategy, another key area is working life relevance., 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 in a collaboration between the faculties.
* 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.

In the University of Turku intranet, an online support for curricula development has been created. In these intranet pages, General skills, such as Working life skills are also discussed.

Developing working life skills can thus be supported in many ways in the curricula. The studies can include separate working life courses as individual entities, or sections developing working life skills can be integrated to 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. Also career and study guidance affects the planning of a target-oriented career and the formation of life-long learning skills.

It is also stated that the curriculum must also show how it is ensured that, during their studies, the students obtain sufficient skills in information literacy according to a national recommendation. These skills in information literacy contain e.g. training in information retrieval, data acquisition and information management.

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

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 (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.

**Do you foresee laboratory activities within curriculum planning?**

Yes, there are courses on laboratory activities, such as “Laboratory practicals in Ecology (3 ECTS), Electrophysiology, Laboratory Course (2 ECTS), Biomedical Instrumentation Laboratory Course (4 ECTS) and Information Technology Laboratory Project (4 ECTS).

In these courses the laboratory activities are studied: planning, carrying out a research, analysing the results, presenting the results orally and writing a report.

**Which kind of laboratory activities do you use? (e.g. in presence, virtual, remote labs etc.).**

E.g. Institute of Biomedicine has several different laboratory activities in different programmes. They are executed in real laboratories. Institute has also a licence to use Labster virtual laboratory ([www.labster.com/](http://www.labster.com/)) in their teaching since May 2021 (see 4.5.). Mostly, virtual labs are not replacing real laboratories, but complementing them.

**In case you use virtual/remote labs can you please describe them in terms of technological infrastructure and pedagogical model applied?**

In the Institute of Biomedicine Labster virtual laboratories ([www.labster.com](http://www.labster.com)) are used. 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.

Institute is just piloting the use of Labster 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.

**Has the COV-19 pandemic affected your curriculum planning practices? In which way? (please describe any changes that occurred after covid pandemic broke out).**

No.

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

* *How do you plan the initiation of a course (e.g. needs analysis for demand and constraint identification etc.)*
* *How are different stakeholders (e.g. teachers, students, businesses and other actors in society) and their needs taken into account in the curriculum development?*
* *How is the content of the course designed?*
* *In faculty level, does the curricula design reflect any specific pedagogical practices and innovation?*
* *In faculty level, what way is working-life relevance discussed in the curricula?*
* *What is the teaching staff-student ratio?*

***How do you plan the initiation of a course (e.g. needs analysis for demand and constraint identification etc.).*** Departments have different ways to be in contact with their environment. 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.

***How are different stakeholders (e.g. teachers, students, businesses and other actors in society) and their needs taken into account in the curriculum development?*** Faculties have advisory committees where different stakeholders are represented. Students are having their representatives along the teachers in faculty and department level committees.

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

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

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

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

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.

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

* *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*

**Name of the partner**

 University of Turku

**Names of respondents, positions, departments**

Timo Halttunen, Unit manager, Brahea Centre

Erkki Härkönen, Development Specialist, Educational Support Services

Matti Lappalainen, Senior coordinator, Brahea Centre

**Provide a short introduction describing the methodology you used and the number and types of sources**

University internet and intranet pages, university strategy and action plan, rectors and vice-rectors statutes for curricula development, teaching, Ministry of education and culture internet pages, government policy plan. contacting the key actors in the university

### **3.1. TEL as a practice in your institution**

* *Is TEL or online courses a usual practice in your university, or do you organize teaching like this only due to pandemic?*
* *How many, in what level? (e.g. graduate/postgraduate).*
* *Is TEL part of the overall strategy for your institution’s development and how?*
* *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?*

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

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

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

**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?** 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.

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

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

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

* ***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.)

### **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?*

**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?** 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.

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

* *Do you involve students in TEL/online course design?*
* *How is the content of the course designed?*
* *Is there any technical support for teachers in course design? Is support given at university, faculty or department level?*
* *Are there any facilitators that support the learners? If there are, please elaborate: describe their role, tasks and the cooperation with the lecturer.*

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

**How is the content of the course designed?** The main content is included in the curriculum. The details are decided the responsible teacher.

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

**Are there any facilitators that support the learners? If there are, please elaborate: describe their role, tasks and the cooperation with the lecturer.** There is no university level facilitator system. However, because individual teachers have much responsibility, some may have systems of their own.

### **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?*
* *How is evaluation performed after the course is taught/delivered?*
* *How is data collected?*
* *Do students give feedback on teaching? If, please describe how.*
* *Who is informed about the evaluation?*
* *What measures can be taken for improvement?*

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

**How is evaluation performed after the course is taught/delivered?** In some faculties the students will have the questionnaire automatically, while in some faculties the teachers are collecting the feedback by themselves.

**How is data collected?** 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).

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

**Who is informed about the evaluation?** 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.

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

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

* *Is your Institution using Quality standards/frameworks for TEL/online?*
* *If no, what are the reasons?*
* *Are you planning to use one in the future?*
* *If yes, which are they?*
* *What quality areas do they cover? How long have you been using them?*
* *Does your Institution collect data in order to evaluate TEL/online programs?*
* *Is there a strategy on the use and purpose of learning analytics within the institution?*
* *Does your institution consider ethical norms and government policy with respect to data protection and the privacy of students?*

**Is your Institution using Quality standards/frameworks for TEL/online?** No.

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

**Are you planning to use one in the future?** Not at the moment.

**If yes, which are they? -**

**What quality areas do they cover? How long have you been using them? -**

**Does your Institution collect data in order to evaluate TEL/online programs?** Yes, data is collected. It is the same kind of data as it is in others forms of teaching.

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

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

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

* *Are TEL/online programs reviewed, updated, and improved and how?*
* *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?*
* *Is there an institutional policy and code of practice to ensure academic integrity and freedom and ethical behavior?*
* *Are there any electronic security measures set by your institution’s policy/code of practice?*

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

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

**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?**

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.

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

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.

**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?*
* *Is the teaching staff involved in designing/ developing/ evaluating educational programs familiar with the advantages/disadvantages of using TEL/online in particular course contexts?*
* *Is the teaching staff trained and proficient in the use of learning technologies and (e-) assessment methods?*
* *Are there any particular training activities for new staff?*
* *Has the institution developed procedures to identify the support requirements of the teaching staff?*
* *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)*

##

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

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.

**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.

**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)**

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”.)

## **Chapter 4. Industry relevance**

* *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*

Timo Halttunen, Unit Manager, Brahea Centre

Erkki Härkönen, Development Specialist, Educational Support Services

Matti Lappalainen, Senior Coordinator, Brahea Centre

Pasi Malinen, Research Director, Brahea Centre

Leena Strauss, University Lecturer, Institute of Biomedicine

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

* *Are industry needs considered when developing the learning model and the curricula design?*
* *How is industry and other stakeholders involved in the process? Are there specific needs considered for STEM education in your institution when transferring courses to technology enhanced learning or online learning? If so, please explain how.*

**Are industry needs considered when developing the learning model and the curricula design?**

**In University of Turku, there are several ways of university-industry collaboration, both on university level as well as departmental level.**

In UTU, part of the Board are people from outside the University. Qualified people are recruited for those positions with a view of 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 organizational 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 a 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.

**How is industry and other stakeholders involved in the process? Are there specific needs considered for STEM education in your institution when transferring courses to technology enhanced learning or online learning? If so, please explain how.**

At the UTU, there are all the technological etc. facilities and technologies that exists available for the students. The University organizes 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.).

### **4.2. Infrastructure**

* *Is the technical infrastructure aligned with the teaching methodology, learning activities, and e-assessment methods? If so, please explain how.*
* *Does the mentioned infrastructure and used online tools support student active learning and collaboration?*

***Is the technical infrastructure aligned with the teaching methodology, learning activities, and e-assessment methods? If so, please explain how.*** 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 has 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 in 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.

**Does the mentioned infrastructure and used online tools support student active learning and collaboration?** Yes,it does in certain extent. Of course there is variation in a big university and there are differences between the teachers.

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

* *Are (e-) assessment methods fit for purpose, allowing students to demonstrate the extent to which the intended learning outcomes have been achieved?*
* *How are they designed?*
* ***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 attainments and how to prepare for exams.

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

* *Does the virtual learning environment, VLE (if any) support specific pedagogical methods and tools?*
* *Is the VLE based on non-proprietary web standards and is it updated to reflect technological changes? How often?*
* *Does the technical infrastructure ensure the accessibility of the TEL/online programme by students with special educational needs and how?*

###

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

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

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

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.

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

Students with special educational needs are taking 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.

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

* *Does the institution provide students with an e-library?*
* *Does the institution have virtual labs?*
* *Does the institution have remote labs?*

##

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

**Does the institution have virtual labs?**

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 is dealing with virtual labs (Output 5: Supporting Virtual Labs and Teamwork with Learning Analytics).

**Does the institution have remote labs?**

No.

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

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

**Do you have courses specific for technology-enhanced learning? How is it organized?** Yes, there is one 1 ECTS module. It is organized online.

**How is teaching staff coordinated during course delivery?** Teachers in Finnish university system have a great autonomy.

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

**Is pedagogical training mandatory for teaching staff?** When recruiting personnel for positions that involve teaching, pedagogic studies or a preparedness to carry them out are required.

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

* *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*

**Name of the partner:**

University of Turku

**Respondents:**

Timo Halttunen, Head of unit, Brahea-Centre, Areal Research and Development, University of Turku

* *After describing the current state of art in previous chapters, identify opportunities and barriers for transformation of education. Put them in order:* ***the most important first.***

### **6.1. Opportunities**

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).

### **6.2. Barriers**

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.

## **Chapter 7. National Policies**

* *This chapter is obligatory only for EU partners and the Iranian coordinator.*

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

* *Please describe the relevant documentation on this (max 2 pages).*

***Please describe the relevant documentation on this.***

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.

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

* *Please describe the main evaluation principles (max 2 pages).*

**Please describe the main evaluation principles**

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.

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

* *Please describe the relevant documentation on this (max 2 pages).*

***Please describe the relevant documentation on this*.**

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.

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

* *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.)?*
* **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.)?**

YES: 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.igher 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.

### **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?*
* *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.*
* *Please provide any ideas you may have regarding reforms in educational policies (at all levels) that would help your organization establish TEL quality processes.*
* ***Which area(s) of legislation pose a significant challenge to the application of TEL quality methods?*** *To our attention, the legislation is quite supportive to advance and use of digital learning in higher education.*
* **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.** 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.
* **Please provide any ideas you may have regarding reforms in educational policies (at all levels) that would help your organization establish TEL quality processes**. 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.
* **Please provide any ideas you may have regarding reforms in educational policies (at all levels) that would help your organization establish TEL quality processes.** 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.

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

* *Are there any training curriculums for TEL/(online teaching practices in general?*
* *Which should be the top 5 educational objectives of a training curriculum in TEL/online teaching practices?*
* *Who should be trained for TEL/online practices?*

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

**Which should be the top 5 educational objectives of a training curriculum in TEL/online teaching practices?**

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

**Who should be trained for TEL/online practices?** 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.

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University of Turku

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