AUDIT OF THE LAPPEENRANTA–LAHTI UNIVERSITY OF TECHNOLOGY LUT

4.1 Digitalisation in teaching and learning

- Korkeakoulun itsearviointi

Strategic steering of digitalisation in education

In 2017, LUT launched a digital education strategy for 2020 to increase digital education as the first university in Finland. The strategy has been updated to reach the year 2025. The long-term goal is to make LUT's higher education services and products globally available via digital tools.

The collaborative strategy processes were chaired by the Vice-Rector for Education. In the first strategy version, concrete targets were set for courses, video materials and electronic examinations, and the outcomes were systematically monitored, while the renewed strategy aims to develop showcases in online education (so called diamond products). The first strategy version was concrete and easy to implement, while the second is abstract and requires more active work from schools and degree programmes. Due to the pandemic, the digitalisation of all modes of education was prioritised and the strategic objectives have not been implemented as planned. Moreover, the strategic objectives for digitalisation need to be reviewed in the near future in accordance with the rapidly changing situation.

The theme of the evaluation area was chosen by the Steering Committee of the Quality and Environmental Management System because LUT has prioritised it as a development target for several years. The audit's self-assessment and external evaluation are expected to serve the future development of university education and the strategic steering of digitalisation – also post-pandemic.

Online education at LUT

In the academic year 2020-21, LUT is offering seven online MSc programmes, 27 continuously open online courses in BSc and MSc programmes and several online courses in continuing education. Innovative virtual tools (e.g. virtual laboratories) are in use on some courses, and [MOOC](#)s for the general public are being developed in LUT's strategic focus areas. In 2016, LUT started its first online MSc programme to increase the accessibility of engineering education. The online programmes have provided highly valued possibilities to teach and study independent of place and time. For teachers, the change in pedagogy has been more difficult and time consuming than expected, and scheduling the studies individually is typically a challenge for students. In an online environment, students need to be more proactively supported to keep good pace in their studies and to avoid dropping out. Especially the integration of first-year students into the university community is a challenge in online studies.

In spring 2020, LUT transitioned to distance learning due to the pandemic. Thus, the digitalisation of teaching and learning has taken a huge leap, requiring extra work and agility from teachers, students and support staff. The accessibility of teaching and equality between students in different locations was improved, but interaction on courses, independent study skills and student motivation were recognised as challenges by teachers. First-year students' specific needs were taken into consideration and intensive orientation was organised in autumn 2020.

Student feedback is important in developing the digitalisation of education. In spring 2020, course feedback remained mainly at the same level as in the previous spring even though teaching was now fully online. This shows that the digital infrastructure and skills of teaching personnel are relatively good. However, the need to update teachers' pedagogical competences in an increasingly digital learning environment has been recognised. Also, a tendency to overload students with work on online courses is a challenge which requires thorough and co-operative planning.

LUT opened its campuses for the autumn semester 2020 and recommended hybrid teaching to enable collaborative learning and on-site meetings for students and teachers. A comprehensive student survey proved the decision successful. Students have been relatively satisfied with the progress of their studies, quality of teaching, availability of help, and possibilities to study independently, meet student peers and study on campus. Supporting students' sense of community, strengthening study guidance and feedback to students on their learning are the main challenges to tackle in digitalised teaching. Standardising online courses and raising the overall pedagogical quality of online education are targets for development.

Support services for digitalisation

LUT has provided support services for online education as of 2001. In 2012, the digital learning team started with one person. In recent years, this support service has been strengthened remarkably, having now 10 experts serving both LUT and LAB personnel. Most of the digital learning team members have a teacher's qualification besides their main higher education

degree. The team gives guidance on pedagogical issues in teaching and learning and maintains and supports centralised data systems for teaching and learning from one place.

LUT schools appreciate and utilise the services the team provides. However, the supply and demand fail to meet in some situations. Timely information about training programmes does not reach targets groups despite the existing demand. It also seems that staff is better aware of assistance in teaching technology issues than pedagogical support although the team offers 25 ECTS credit university pedagogical training and many short courses in pedagogy. Dialogue between degree programmes and the team and sharing good practices have been recognised as development targets. In autumn 2020, collaboration has been strengthened by inviting the team manager to the regular meetings of heads of degree programmes.

Strengths	Enhancement areas
Digital readiness of personnel and students	Raising the pedagogical quality of digitalised teaching
Strategic steering for digitalisation of education	Strengthening communication, interaction and a sense of community in digitalised education
Pedagogical and technology support by digital learning team	Systematised monitoring of digital education

4.1 Digitalisation in teaching and learning

- Auditointiryhmän arvio

One of the reasons indicated by LUT for selecting digitalisation in teaching and learning as an evaluation area of the audit was its desire to learn more about teachers' and learners' views on how digitalisation affects university education and how digitalisation changes university education, pedagogy, studying and learning. The university also wants to learn about supporting and managing change in order to create high-quality competences for the future world of work. During the audit visit, digitalisation in teaching and learning was discussed in interviews with various groups and in workshops with teachers and students.

Strategic development of digitalisation prepared LUT for online teaching

and learning during the pandemic

By creating a Digitalisation Strategy for the timeframe 2017–2020, LUT has forecast the development of society and the role of digitalisation in the internationalisation process. The university has acknowledged that in order to become more accessible for international students and staff, the university has to offer a wide variety of online degree programmes together with open courses. The 2020 Digitalisation Strategy aimed to have an approximately equal number of degree programmes and courses delivered online by all three faculties, thus showing consistency in the strategy development process as a whole. The Digitalisation Strategy 2020 helped LUT with resources for online learning, and the current Digitalisation Strategy 2025 will represent an important step to consolidate digital teaching and learning, taking it from emergency to high-quality online education. It was recognised during interviews that the digitalisation of higher education brings both opportunities and challenges in a global market. The management recognised that the most challenging issue in digital learning is to bring it as close as possible to on-site learning in both quality and efficiency.

In order to keep track of the implementation of digital learning and teaching, there has been monitoring in place based on the mechanisms of the previous digitalisation strategy. The feedback on individual courses has been monitored at different levels of the university, and management representatives have had continuous discussions with the student union concerning online teaching and learning, especially during the pandemic. In the workshop, teachers provided several examples of how they had made improvements in their online courses based on feedback, monitoring of students' activities, and results. In general, the whole university community acknowledges the benefits of digital tools, and among the teaching staff in particular, there are clear ideas and plans to maximise the potential of these tools. However, as mentioned below, student experiences also tell about inconsistencies in online teaching and how teachers respond to student feedback.

It is clear that the past year of remote learning and teaching has contributed to the rapid and continuous development of the digitalisation process at LUT and the world as a whole. Thanks to the forecasting of digital needs prior to the pandemic, this transition was quite smooth in most cases. However, this fast pace has required the university to have a consistent follow-up process for the strategy development concerning digitalisation. It was also mentioned by the top management that LUT wants to await further steps and direction when the target is constantly moving. Also, the management did not want to burden the teachers in a situation where many have been struggling during the pandemic. The university representatives acknowledged that the Digitalisation Strategy 2025, which was developed before the pandemic, is outdated, and they are planning to develop an action plan based on the latest changes. The university should ensure the communication of follow-up results and the action plan of the current strategy so that its improvement would be based on these results.

The support provided by the digital support services was highly appreciated

In terms of proactiveness, the university also supports teachers in transferring their courses to the online environment. To ensure the implementation of digital teaching and learning, support services offer continuous learning opportunities for the teaching staff in terms of pedagogical approaches, online teaching skills and digital tools. As mentioned by the representatives of digital support services, they are trying to support teachers in any way they can. Online courses can be tailored with the support staff, and together with them, teachers can find solutions for pedagogical and technical issues in online courses.

Based on the workshops, teachers mentioned several aspects that work well at LUT in terms of the digitalisation of teaching and learning. These were (among others):

- Opetushelp and the digital learning team offer a wide variety of helpful services. They provide valuable support and training on digital tools and online teaching and learning.
- Peer advice and sharing of good practices within and between degree programmes. Doing things together with other teachers and implementing working solutions.
- Challenges with online teaching and learning are discussed in meetings with colleagues. Knowledge of the digital learning team and other colleagues has been helpful in resolving issues.
- Pedagogical training has been essential and has provided good ideas and best practices for teachers.
- Moodle platform for sharing ideas and good practices (one faculty).
- Lots of information available on the intranet.

Services offered by the digital learning team and Opetushelp were widely appreciated by the teachers. Many of the teachers participating in the audit teacher workshop had participated in training related to digital tools and pedagogy. The other support provided by the digital learning team and Opetushelp had also been used by several teachers. However, accessing this kind of service also depends on individual priorities, motivation and open-mindedness of teachers.

Flexibility in studies is appreciated by students

Since most beneficiaries of online learning were international students until 2020, once the pandemic broke out a year ago, the transition from on-site to fully online learning was new for Finnish students (especially those enrolled in bachelor's degree programmes). The main assets provided by digitalisation for students relate to the flexibility of education. At the audit visit, students mentioned the following positive aspects of online teaching and learning at LUT:

- Quality has remained largely the same as before, though with some variation between courses and teachers. There were also other experiences based on which online teaching is not able to achieve the same level as on-site teaching.
- All necessary information is online. Clear timetables with all important dates are in Moodle.

- Different online learning tools and assessment methods are used in many courses. Fewer exams.
- Good online exercises. Many courses have included videos about the exercise topics. Interesting simulation games have been added to some courses.
- Flexibility in terms of scheduling, studies are not time-bound. Students are better able to combine studying and working.
- Flexibility provided in submitting assignments and tasks.
- Exam room where students can schedule exams to fit their own schedule.
- Motivating to be offered extra points for participation in online lectures
- Most teachers easily approachable and answering well to queries. Requests for help usually handled swiftly, professionally and with the intent to help students. Students have not been left alone. Some exceptions were mentioned.

In terms of students' support for digital teaching and learning, LUT has provided several means to reach students' needs in these uncertain times. There are informal meetings organised on the institutional level—added to the 'consultation' meetings for certain courses provided by the teaching staff—to address the issues brought up by students who might have difficulties in their academic performance. Also, the university library offers online literacy search courses and academic writing courses, especially for students in their last years of studies, to help them with their work for bachelor's or master's theses.

Inconsistencies in the online courses according to students

In times of continuous changes, both from an educational and pandemic-related perspective, the development of online education went at a fast pace. However, some of the challenges in online teaching and learning are not specific to online teaching. Issues that apply to on-site teaching and learning also come up in the online environment.

Students identified the following challenges in online teaching and learning:

- Heavy workload in some courses.
- More variation needed in learning tasks. Some courses always have the same elements.
- Pre-recorded online material has sometimes not been available in reasonable time with respect to assignment deadlines.
- Variation in skills of teachers in using online tools.
- Variation in interaction with teachers.
- Course pages are different, which confuses students.
- Course materials sometimes outdated.
- Sometimes issues with teachers not responding to feedback.
- More online courses could be offered together with other universities.

Based on student views, there have been some inconsistencies in the online approach between courses and individual teachers. As also mentioned in Chapter 1, the feedback loop is not always closed because of the low response rate in course feedback, teacher rotation or non-

responsiveness of individual teachers. LUT should look into how variations in teaching and reacting to course feedback could be improved to enhance the overall quality of student experiences.

Teachers need more time for the development of their online teaching

A general challenge recognised by both teachers and student representatives was the insufficient time teachers had for improving their teaching and courses. This is partly due to the focus on research and sometimes administrative obligations added to their teaching activity. Some teachers noted that the salary system with the focus on research does not allow teachers to focus enough on teaching and its development. The audit team recommends that LUT reviews how teachers are given working hours for course development in schools. On the other hand, based on the audit visit, there appears to be encouragement from the management for pedagogical development.

Challenges and some ideas for further improvement, according to the teachers and other staff:

- Variation in how teachers address the need to move to online teaching and challenging to unify the approach.
- Some courses are easier to move online than others.
- Several channels for information for both staff and students (Teams, Zoom, Moodle, email chat groups, etc.).
- Student expectations for quick answers at evenings and weekends. Teachers cannot work 24/7.
- Increasing student numbers and requirements for individual feedback adds to the workload.
- Online teaching is time-consuming. Hybrid models need more resources.
- Participation rates are lower in online teaching, and making students participate is important.
- Addressing the diverse group of students also in the online environment.
- The university should provide support to students in online learning, especially time management and 'learning to learn'.
- Making online teaching and learning more interactive to involve students.
- Evaluating students properly in an online environment. Some cases of cheating have been suspected. Developing appropriate exam questions that encourage independent responses and reduce the possibility of cheating.
- Low response rates in feedback questionnaires do not support course development. There are new opportunities for students to give more course feedback in an online environment.
- Studies where laboratory work is required are difficult to carry out in an online environment. Development of virtual classrooms and virtual laboratories.
- Not all tools are up to date, and new tools will be needed and with related support.
- More training in digital pedagogy is needed.
- Time for development of online teaching and learning. Time to do online teaching better.
- Important to collect lessons learnt from teachers at LUT.
- More channels to share good practices related to online teaching and learning tools, e.g. in

the intranet and making the Moodle platform LUT-wide.
- Learning analytics providing systematic ways of measuring student learning. Clear pathways for students with learning events and checkpoints for teachers to follow the learning and provide feedback.
- Automation of exercises and feedback.

As also discussed in Section 2.3, peer advice, collaboration and sharing of good practices is at a good level at the university. Teachers can share experiences and ideas in seminars and training, meetings and informal discussions. Based on the workshops, it was clear how important exchanging ideas and practices between peers is, and there were several examples of how ideas already tested by colleagues were used in one's own courses. Ideas and tools in online teaching and learning are also shared and discussed in national and international forums. There is an exchange between the technological universities in Finland. For example, tools and course materials have been shared. Nonetheless, teachers still wished for more channels and forums for sharing experiences across LUT and more training in online pedagogics.

Learning analytics and automation were recognised by staff as an important next step in online teaching and learning. Teachers cannot be available 24/7, so automated assessment and feedback are needed. Automation also provides opportunities for tailoring exercises and feedback for individual students.

All in all, the digitalisation of teaching and learning is a good example of how LUT works strategically and uses its quality system and other functions to monitor activities and then takes actions to improve things. Many of the strengths and challenges related to digitalisation in teaching and learning have already been recognised by LUT in its self-assessment. In terms of the next steps, the audit team encourages LUT to take full use of the competences and experiences of its students and staff.