Empowering Higher Education in Adopting Digital Learning - Latvia's Needs Analysis

Latvia's Needs Analysis

The text summarises information from four focus groups that were conducted: with **lecturers** (on 15 June – 6 participants); **students** (on 7 July – 7 participants); **industry/business representatives** (on 25 August – 4 participants); **policy makers** (on 10 September – 4 participants, experts of the Ministry).

Each of the focus group discussions covered all the main topics, but the discussion of them in each group was different, both in terms of the level of involvement of the group in the topic and the limited time available for all questions.

It should be emphasised that most students' distance learning experiences were due to the circumstances of the Covid-19 pandemic, as they had started full-time studies. In the group of lecturers – all lecturers had experience in working with educational technologies and/or in the digital environment.

The structure of the text is in accordance with the main document for the focus group discussion developed by the Flemish part, identifying the needs expressed by the participants within the main themes and subthemes. However, the themes summarized in the last part (5) of the text were not covered in all focus groups.

This text reflects the views of the participants of focus groups and it is not an official position of the Ministry of Education and Science.

1 "Students" theme

1.1 Students' needs and skills

1.1.1 Introductory course, acquisition of self-directed learning skills

In general, students themselves perceive technology positively, while **emphasising the need for training at the beginning of their studies to ensure the acquisition of appropriate skills to work with digital resources**. It can be an introductory course that better prepares students to use digital solutions or apply them more effectively. Students believe that the content of studies and its acquisition must be integrated with students' skills, which at the same time indicates the need for students "learning to learn" in the early stages of studies.

Students admit that their previously acquired digital skills become important in the studies, which are different; for example, not everyone in school has mastered programming and informatics, but this has an impact on the effective use of digital tools, such as cloud computing.

In order for students to better sense the study process and acquire self-directed learning skills, a "transition" stage or a separate course is needed, especially in the first year. Students' time planning skills are of great importance for successful distance learning, but lecturers must ensure that "saturation with digital tools" does not occur during the study process.

Students believe that in the early stages of studies, the **teacher plays a major role**, and the teacher agrees: lecturers need to help students develop self-directed learning, and get more into the "student shoes"; we cannot automatically assume that they know and understand it.

Lecturers also emphasise students' motivation to study remotely (although, for a large part of students' the study experience in the digital environment was determined by the conditions created by the pandemic). However, students are very different; there are those who highly value this opportunity to study at a distance, but there is another group that connects to studies "formally" and is even passive. Teachers have noticed that not all students want to learn educational technologies, especially those who study part-time and are older; they try to avoid these study tasks.

1.1.2 Acquisition of advanced competencies and digital skills

Students emphasise that they want to acquire certain competencies during their studies, which are more based on practice, not just theory. Digitalisation of various processes will determine the need to acquire specific digital skills during studies.

According to employers, digital competences are one of the important transversal skills. In a number of sectors, digitalisation has been successful for several years, including in very specific respects, but sometimes even large companies lack certain competencies, for example, in cybersecurity, or handling large amounts of data. Until now, discussions about the specialised courses in informatics and coding have been about their introduction in schools. Students believe that it is also necessary to think about it in universities.

With regard to the acquisition of digital competences, it should be identified which should be acquired as "transversal skills" for students in all study fields, but which specific digital skills are important in certain fields of study to succeed in the chosen profession.

1.2 Digital inclusion

Both focus groups of students and lecturers had a wide-ranging discussion on the inclusion of different groups of students. **The existence or availability of modern devices and software is essential.** Student representatives mention that **not all students have access** to a modern computer, although computer classes are available at universities.

1.2.1. There are more opportunities to study, taking the situation and needs of students into account: those living in remote areas do not have to travel long distances; new mothers do not have to take academic leave; introverts and people with low stress tolerance and possibly various learning disabilities or limitations due to health conditions feel more comfortable in this format of the study process.

Students appreciate both convenient communication in the digital environment and the opportunity to choose the time for studies. Digital inclusion is associated **with the development of different forms of study** and/or the implementation of digital/ blended learning approach. Such forms of study could facilitate the availability of studies for various groups of students mentioned above.

1.2.1 Inclusion of students with special needs

In order to successfully include students with special needs, attention was drawn to the need to use and adapt appropriately developed technologies. Digital technologies can also be of significant help to students with learning disabilities (e.g. difficulty speaking, speaking in public).

In the focus group of lecturers there was a wider discussion about **the lack of a system for the inclusion of students with special needs in higher education in Latvia, and the professional training of lecturers is required** not only in the field of digital inclusion, but also to promote cooperation with different groups of students, recognising their needs and differences, which would allow lecturers and educational institutions to provide the necessary support.

It is important for lecturers to recognise the student's objective difficulties, but we are not experts in this field; support and methodology are needed to recognise objective learning disabilities and how to adjust them, lecturers suggest.

Accessibility in the digital environment is an area that needs much more attention.

Until now, more attention has been paid to the accessibility of infrastructure and the environment, but ways must now be found to integrate accessibility and inclusion into digital resources and study course tests to avoid misunderstandings due to the incorrect choice of digital technologies. The lecturer should be familiar with various tools and their use in assessing students' knowledge:

Digital tools must be specially designed; sometimes very little is thought of for those who do not see so well, for example, different colour combinations, or the ability to switch to different modes, to audio, and so on. Tilde is working on speech recognition, but the technology is not yet widely available.

1.3 Well-being and mental health

This topic has become more relevant during the pandemic, when due to various restrictions, a lot of time had to be spent in the digital environment and a significant decrease in social contact made a large number of students experience psychological difficulties.

Students admit that in general these issues were addressed at the university. Events and lectures were organised in several universities, which were also organised by the students themselves. However, not all universities provided professional support to students at this time; in turn, at some universities, the support of a psychologist was important to a large number of students.

Students mention that spending a lot of time in the digital environment makes it boring and more difficult to keep up with study topics. It is also physically very tiring to sit for several lectures in a row for many hours at a time. In some universities, these problems were discussed with lecturers, work tasks were diversified, and several breaks were organised during the lecture. It is important

both for the students' ability to organise daily activities and to include sports activities and physical exercises.

Studies in the digital environment significantly **change the cognitive load**, therefore *we should think much more about this aspect in the organisation of the study process, as well as ensure that there is no oversaturation with digital tools in studies*, say both lecturers and students.

The topic of "Mental health in academics" is very important when working and studying in the digital environment, and much more needs to be cared for and thought about by both students and lecturers.

2 Theme "Development of study courses and Curriculum Design"

2.1 Development of study programmes

2.1.1 Current situation and identification of trends

It is important to be aware that **digital changes cannot be transferred directly from the "analogue" system**; this approach can also be applied to the study process and study programmes. **There is an opinion that on-site classes are more effective**. A lot depends on the study course and the specifics of the field of study. It should be defined what can and cannot be transferred to the digital environment. Other solutions should be developed and different forms of cooperation should be sought according to the study goals and the needs of the learners.

Both lecturers and students have found that the current situation in the digitalisation of studies and the use of digital tools or technologies is different. There are study programmes in which technology learning has been continuous due to changes in the field or it is integrated, for example, learning about educational technologies in pedagogy study programmes. In study areas *where there is no such tradition, it is more difficult*. There are fields of study and industries where digitalisation processes are very uneven or fragmented.

During distance learning, **previously developed applications and platforms such as Moodle** were widely used, which is well known and has been used by many universities in Latvia for several years. New tools were also introduced, and forms of interaction were sought. Some lecturers also adapted other tools in the study process in a short time and invite the use of them in the future, e.g. for tracking eye movements, behavioural assessment in social sciences, etc.

There are areas where real practice is needed and digital tools are limited. The industry representative is convinced that*, for example, during the pandemic, the fact that students could not work in laboratories caused great problems in chemistry, but this is an area where it is impossible not to work in a laboratory; practical skills are needed.*

2.1.2 Involvement of industry representatives in the development of study programmes

In Latvia, it is stipulated that the development and implementation of professional study programmes must involve the industry and/or employers. Several representatives of companies admit that they have generally developed good cooperation with the faculty and that study

programmes have been developed or revised in close cooperation with employers and industry, but the experience is different. Sometimes the compliance of the study programme with the requirements of the labour market is a formality, because the management of the university has other priorities.

In general, digitalisation is an important area for companies and employers as automation and robotics trends evolve. There is a lack of human resources and the automation or digitalisation in various sectors is very important, but it requires a new level of knowledge and skills for both employees and future university graduates.

Industry representatives support the approach that specialists with extensive basic knowledge are trained, but specialisation takes place in the last courses or specific skills are acquired in practice in the company. Companies **could offer up-to-date content for studies**, but a lecturer must select it so that the study content does not include the advertising of a company or a specific technology, or specific solutions of a certain brand.

Not all industries have thought about digitalisation processes, but in industries, technologies in general are evolving and sometimes changing very rapidly, so it is necessary to assess what to learn in the study process, and what to learn during the internship.

2.1.3 Development of current study courses

Students emphasise that in the future they should take more specific courses, and also acquire certain digital competencies and in the fields of informatics and programming; more practice is needed than just theoretical study courses, as well as the inclusion of research at lower levels of study, already at the bachelor's level.

Industry representatives call for consideration of how to ensure the acquisition of specific topics and areas in which there are no lecturers and specialists in Latvia. The attraction of foreign lecturers to faculties is limited by funding, but other opportunities should be sought, where digital resources or cooperation in the digital environment may be important.

Policy makers, in cooperation with university and industry representatives, have begun to develop a funded programme of study modules that would promote the **acquisition of high-level digital skills** relevant to successful digitalisation.

It can be concluded that: (1) the existing study programmes cannot be fully implemented in the digital environment; it is necessary to take such into account in the study programme development process in accordance with the specifics of each field; (2) the choice of an appropriate methodology is essential, both in terms of content and the advantages or objective limitations of technology and the digital environment; (3) it is necessary to think about how to include the acquisition of relevant high-level digital skills in the study programmes as transversal skills, if the field of study itself is not directly focused on the acquisition of these competencies.

2.1.4 Student assessment in the digital environment

Students and lecturers agree that **different assessment methods should be used**. It is important for students to receive **feedback and evaluation**; it can be provided on the e-platform. In the digital

environment, it is sometimes more difficult for teachers to understand whether students have perceived the material or have mastered it completely; it is more difficult to assess some skills.

There is usually a two-stage assessment, but the assessment of students in the digital environment is not yet fully organised and implemented, thinks one lecturer. *An excellent example: the lecturer combined the use of digital tools, group and independent work*, students say.

Students evaluate examinations in the digital environment in different ways. There were courses, where the assessment was very strict and works had to be submitted in handwriting; elsewhere it was mandatory to turn on the camera during the test. A good Covid-19 practice that the lecturer would like to maintain is the form of the exam: a 1:1 conversation with a student in a **digital environment** that is very convenient, whereby it is easier to reach the students.

Lecturers emphasise **the observance of academic integrity** in the study process, but it is especially important in the digital environment so that students perform the work tasks themselves.

If there are a lot of students (~200), it is difficult to provide feedback. In this case it is necessary to choose **automation**, assessment in a digital environment, **using various tests in a digital environment.**

At the same time, the lecturer acknowledges **that the importance of different tests can be overestimated** and it is not always possible to assess the student's thinking and analytical skills by using technologies and platforms; it must be combined with open-ended questions. Tests should be prepared with 5-6 choices and small nuances, when without learning it is not possible to guess the correct answer.

Lecturers use Moodle tools, and also the possibility **of students evaluating each other**; the criteria must be prepared so that students can do it, but not all lecturers use this tool. Students admit that *some lecturers used Moodle features that they had not used before.*

However, there were study courses when *nothing changed much* in distance learning. Students think that the lecturers had not mastered the use of digital tools and *older lecturers gave a lot of independent and homework assignments.*

2.2 Support for lecturers and professionalization

2.2.1 Mutual learning and professional development of lecturers

During Covid-19 pandemic, mutual support between lecturers increased: we *shared our experiences a lot. We established the observation of lecturers' work* – ***mutual learning***. Lecturers admit: sometimes it is a big challenge to change your current approach; however, it is important to understand a student-centred approach. In-depth study of well-known things can also help, e.g. all PowerPoint features.

In Latvia, national regulations determine the professional development of lecturers in the amount of 160 academic hours over 6 years, but they are provided by higher education institutions in various ways. Established practice in universities can vary considerably. There is a need for systematic training for lecturers to learn educational technologies or improve skills in working effectively with them in the digital environment.

Courses must be specialised in a way that interests lecturers and meets their needs and knowledge; courses for everyone are not needed.

There is not always a methodological understanding of the use and evaluation of digital tools in the digital environment, but it is very important to take the **purpose of the methodology** into account: *what is most suitable for the course and field and what we want to achieve with the study methodology*. Technologies also have their own "fashion", and sometimes the student is oversaturated with them, the lecturer thinks.

2.2.2 Support staff, system and time required

Lecturers need much more support in the development of study courses, because it is time-consuming, requires knowledge of methodology, but the opportunities to learn and implement all the tools are limited in parallel with their work. It cannot just be an initiative, as the total workload is high, and the preparation of such courses is also very labour-intensive and can be difficult.

Support staff are needed; *there are tools I know myself, but I can't do everything myself, and support is essential*. At the same time, lecturers admit that **it takes time** to acquire new skills; everything cannot be learnt at once, but this year the breakthrough was very big, because there was a demand to learn it in a short time.

Both students and lecturers mention cooperation in learning new technologies:

(1) There are lecturers who are not shy to ask students for advice, and lecturers, like students, learn everything very quickly. (2) There are students who are "pioneers" and we can learn from them; collaboration with students is important. Unfortunately, not all student initiatives have been successful: *We intended for "Digital crank" ("Digitālais kurbulis") to help lecturers learn technologies more successfully and provide studies remotely. This initiative did not receive much support due to the position of several lecturers, as many could not [...] accept help from students.*

Students think that for many lecturers at a respectable age it is not so easy to learn digital technologies or they do not want to learn them. Representatives of companies have also observed that older lecturers sometimes include content of knowledge that was relevant several years ago in their courses. On the other hand, experts in the field do not always have the qualities of an educator to work as lecturers.

There is a need for a purposeful, **planned system or programmes for the professional training** of lecturers to work with educational technologies and in the digital environment; it requires time for the acquisition of skills and support to prepare such study materials, as well as in some cases, a psychological or motivating tool for the lecturer to have the desire to use educational technologies and work in a digital environment. At the same time, the issue should be considered in a broader context and **in general the system of professional development of lecturers should be structured**, in which the use of educational technologies in the digital environment should be considered as one of the topics; many lecturers have no knowledge in pedagogy.

Currently, a new academic career model (tenure) is being developed in Latvia, and professional competences will be defined for each academic position. It would be important to define a common understanding of competencies at each level of the academic position, as well as to identify the

lecturer's existing competencies by developing a tool or test. It is no less important to prepare new lecturers who are just starting work at the university.

2.2.3 Professional lecturer training centres/contact points

Professional competence development centres for lecturers have been established in several universities in Latvia. According to the university representative, this is important because such centres know the specifics of the university's fields of study, as well as specialise and have accumulated experience in these fields of study. With the development of various educational technologies, the differences in fields of study shall be taken into account, and such centres can provide the best support to their lecturers and students. Funding is needed to set up and maintain such centres.

In such a model, teamwork is important, with a specialist in pedagogy and educational technology who works with lecturers and provides immediate support when needed. The lecturer prepares the content and the support specialists of the centre prepare the study materials, which are "dressed" for use in the digital environment; there are several such teams. The lecturer would need in-depth knowledge of the possibilities and use of these technologies; not completely, but basic digital skills alone would not be enough.

In small universities, this can be a contact point or a person who coordinates support for lecturers; in some universities, the IT service provides advice on the use of educational technologies. In large universities, each faculty may need such a contact person.

The content of lecturers' pedagogical development is important, including compulsory courses in pedagogy and **a module on smart pedagogy**, however, attention should not be paid only to pedagogy in the digital environment; basic knowledge in pedagogy and a "student-centred" educational approach is needed as well.

3 Theme "Vision and policy"

3.1 Vision and policy

3.1.1 The need for change management

Digital change in education cannot be directly transferred from the existing system, admit the participants of the discussion; it is well described by the company's representative: *we cannot develop future technologies with yesterday's methods.* Although the distance learning "created" by the pandemic has made a big "leap" in this area in the last year, it has not been easy. The attitude and knowledge of the involved parties about the meaningful and effective use of digital technologies in the study process differs. People's perceptions and ability to accept change also vary.

There are indicators of the level of digitalisation in general, but the availability of all services and their ease of use is important; the transition to digital solutions should be gradual, students think.

Thinking about the vision at both the national and institutional level in the field of digital education, several questions should be answered: ***What are the goals and what do we want to achieve with***

digital solutions in education? *Do we want education to be available to people faster, cheaper, and more? Is it modern and cannot it be ignored? Do we want to improve the quality of studies?*

Change management in digitalisation processes is necessary and should be considered at different levels in education. The idea of **agents of change for digitalisation at the institutional level** should be considered. It is true that several universities have already started these changes faster and approaches are different.

3.1.2 Policy planning documents and involvement of community groups [1]

The participants of the focus groups concluded that there are many policy and planning documents in Latvia. Lecturers believe that there **is a gap** between policy makers and lecturers who carry out study work, *which should be minimized, because sometimes neither parties hear each other; it should be better said* ***how we will fulfil and achieve this vision***.

Representatives of companies/industry draw attention to the fact that in the next policy planning period a lot of attention will be paid to the digitalisation of companies. At the same time, there is a question – **how it is planned to link these new trends with educational institutions, how education reflects the development trends of industries** (the European Green Deal, circular economy, digitalisation, etc.), how continuity is formed at educational levels.

Representatives of the companies think that at the policy level it would be important to **reach a common understanding** *of what all parties, the state, the companies involved understand by "digitalisation in companies", [...] "the Green Deal", and how to relate it to education.*

Industry representatives acknowledge that cooperation in higher education institutions is implemented more at the faculty level, but they are not always involved in the development of higher education strategies and we cannot influence the distribution of the budget at the university.

Interestingly, lecturers did not particularly emphasise their role or involvement in the development of institution-level documents, although they are aware of policy planning documents, and sometimes management asks for an opinion on a state-level document on behalf of the university.

On the other hand, all the representatives of the students present admit that in the development of documents of different levels, incl. in the process of developing the university's strategic documents, the opinion of the students' self-government is always requested and taken into account. Although there are policy planning documents and university development strategies, students think that the vision is insufficiently developed and that there is a lack of a separate document on the digitalisation of higher education at both the state and institutional levels.

In Latvia, several comprehensive policy planning documents for the period 2021-2027 have been approved[2] ; in each of them, several sections are devoted to the development of digitalisation processes in education and science, the development of digital solutions and the wider integration of technologies and innovation in study and administrative processes (e-solutions and

[1] Latvian legislation defines the need for public participation and the involvement of various groups of society in the development of state policy documents (in most cases this also applies to the development of legislation).
[2] Guidelines for the Development of Education for 2021-2027, Guidelines for Digital Transformation for 2021-2027, Guidelines for the Development of Science, Technology and Innovation for 2021-2027.

governance), and the development of high-level digital skills. Given the planned amount of investment and extensive digital transformation processes, **this area can also be considered a high priority in the development processes of higher education.**

Based on the policy planning documents, both action plans for the implementation of these policies and the conditions of the implementation programmes for the achievement and implementation of the objectives are further developed. However, it can be concluded that the overall policy planning system and document development **is complex**, and university lecturers, students and industry representatives do not always identify their needs and opportunities for involvement. Criticism is often given to the defined indicators, which is more quantitative, but should also include more qualitative indicators to achieve the objectives set and a "low science" approach.

In order to reduce this gap between policy makers and stakeholders, **more attention should be paid to permanent, mutual dialogue and the implementation of change management at both political and institutional levels.**

3.2 Quality assurance

In the Latvian higher education system, study programmes that were developed **in the form of distance learning** and received accreditation also existed before the pandemic, however, this is a relatively small number of study programmes. As mentioned above, digital solutions and their use in the study process in each university before the pandemic were different, but in the external evaluation of the quality of study fields they were evaluated as full-time on-site study programmes, assessing the technology provision available at the university as a whole.

In the existing external quality assessment, when evaluating the study programme/direction, all technical equipment and premises and how the planned study results are achieved are taken into account. In the self-assessment report, higher education institutions also provide information on the implementation of study programmes, selected methods and technologies in order to achieve learning outcomes.

The discussions acknowledged that quality was difficult to assess in the light of the experience gained during the pandemic, as during this *time we all had to make the rapid switch to digital solutions*. At the system level, digital solutions had not been comprehensively implemented before, and the preparedness and understanding of lecturers and students differed.

Every university has an internal quality system, but lecturers think more about the quality of their work and its positive evaluation in the long run. For students, this was a challenging issue and difficult to assess; it also takes time for this experience to be assessed in terms of quality.

It is important for each higher education institution to have a developed and functional internal quality system that is able to respond to various changes and possibly provide support, even in an emergency situation such as a pandemic.

As **various hybrid and digital studies will continue to develop**, the quality and their provision should be systematically addressed in the future, taking into account both the development of study programmes for such a format and the validity of the chosen technologies, their availability, the provision of appropriate methodologies and internal quality of study processes.

Students believe that much will depend on the lecturers; what they consider to be appropriate and the students' demand. The teachers' opinion about the **students' evaluation** of the study course is sometimes sceptical from the quality point of view: *we sometimes overestimate it, because the students are not yet experts in the field.*

There is an opinion that part of the full-time form of studies is not substitutable, therefore the combined (blended) study models should be evaluated as well as to what extent such should be specified in the legislation, taking into account the differences and specifics in different fields of study. On the other hand, the conditions for the implementation of the distance learning study form and quality assurance are currently not defined in legal acts.

Policy makers think that the issue of quality assurance should also be raised in external quality assurance of the overall study field/programme (or in the future accreditation of institutions); discussions may be needed on the revision of "The Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG)" at the European level, taking into account how the learning process is provided in digital learning format, etc.

4 Theme "Infrastructure, resources and funding"

4.1 Funding

4.1.1 Planned investments in the period 2021-2027

At the national level, significant investments are planned in the development of digital solutions in higher education and high-level digital skills. Within the framework of the Higher Education and Science Excellence and Governance Reform Programme, investments are also planned in the development of digitalisation processes and technologies, and in the improvement of research and education infrastructure.

A programme is currently being implemented to support the development of digital and pedagogical skills of academic staff; "Round 2" provides consultative support to lecturers for the implementation of new digital solutions. Representatives of the academic and scientific staff of Latvian higher education institutions and scientific institutions are also currently participating in international training for the acquisition of high-level digital skills and knowledge transfer.

The EU Recovery and Sustainability Mechanism plan includes a component "Digital Transformation", which includes investments in the provision of high-level digital skills and the development of appropriate study modules, as well as in the development of research and provision of infrastructure. There are also other programmes under development that focus on the development of such skills for both students in study programmes and heads of higher education institutions and entrepreneurs.

Specialised training for the development of industrial skills is planned, incl. the acquisition of digital skills. Acquisition of various digital competencies is planned in the digitalisation activities of the study process, incl. the development of pedagogical competencies in the digital environment.

4.1.2 Current situation: formation of funding demand

Lecturers mention the **total insufficient funding for higher education** as the main obstacle.

No faculty has enough funding if the faculty has a vision. Thanks to funding during the time of Covid-19, more funding is available for digitalisation solutions. For development to take place, ***project financing alone is not a long-term solution***.

In general, the lecturers evaluate the projects positively, because there is an opportunity to make new contacts and gain new knowledge, as well as to obtain additional funding, but *the more projects there are, the more intensive the work load*. The remuneration of lecturers should also be significantly higher.

Students' representatives think that *quality comes from funding, but funding for higher education in Latvia is low;* moreover, not all higher education institutions are managed by one ministry, which complicates the financing of some areas from the state budget.

All stakeholders recognise that **continued financial investment is needed to develop and implement digital learning technologies in the study process**. In addition, technologies are changing very rapidly, they need to be constantly renewed, the usefulness of investments needs to be carefully assessed (*less is better, but with better quality*); the main thing is to ensure sustainable investments, industry representatives emphasise.

The Ministry of Education and Science is currently revising the three-pillar model of higher education funding in order to receive significantly more funding for higher education institutions as performance funding. It is planned to review the funding procedure for study places, because different funding coefficients have been set for each field of study; a new remuneration model for academic staff is being worked on.

4.2 Infrastructure, resources

4.2.1 Premises and available digital tools

Students who participated in the focus group believe that it is possible to provide lectures in a hybrid/ blended format at their universities. Universities have a lot of premises, they are well equipped, and they have versatile digital tools. There are open access computers in the library or other premises, but it cannot be said that there are many open access computers in all universities. Students emphasise **the importance of free availability of digital resources**, also in the availability of paid software, because a variety of laboratory work takes place with these programmes.

On the other hand, the lecturer believes that *education should include various educational technologies; students and pupils cannot be made dependent on the solutions of only one company,* acknowledging that its lobby is very strong.

Representatives of the industry believe that the provision of various technologies for studies could always be better; it cannot be separated from the science and research, including the implementation of professional study programmes. At the same time, it is understandable that technologies will not be available in educational institutions to the same extent as in companies. Universities **should work more closely with companies** when organising internships.

4.2.2 Administrative processes in the e-environment

Students are generally satisfied with the digital infrastructure available to them during their studies for administrative processes before the pandemic – *digital solutions support both the study process and administration issues. We have an e-system of documents, new orders are also in the e-system, and documents can be signed with an e-signature. I do not see any significant problems; both options fit.* However, signing study agreements with an e-signature is not always widely used and available to all students.

From the point of view of the system, various digital services and solutions are currently fragmented and divided between universities and various institutions; the Ministry together with the involved institutions is working on the establishment of a unified competence centre for digital services for science and higher education **"Unified Digital Services Centre for Higher Education and Science".**

4.2.3 Open educational resources

In general, both students and lecturers positively evaluate open educational resources, believing that it is a good opportunity to diversify the study process by combining resources. However, the experience of working with open educational resources differs for both teachers and students, and **guidelines would be needed**.

In exact sciences, the use of open access software in studies is important; it should be used more, because students can also use it at home.

In our university, the acquisition of theoretical studies in all faculties takes place through these resources; lecturers recommend certain courses. There are teachers who pay a lot of attention to such resources, and ask to do independent work; in other courses they should be used and then critically evaluated, students said.

Representatives of companies have thought less about open educational resources, but believe that *local opportunities and capacity are limited to attract foreign lecturer; at the same time the quality of these resources must be assessed.*

In the opinion of policy makers, open educational resources in the study process should be used more widely, however, it should be assessed at the level of faculty and/or study programme implementation. The development of such courses is labour-intensive and expensive, therefore it is not planned to finance their development extensively from the state budget; it is useful if it is a joint course, which would be integrated into study programmes by several universities.

4.2.4 Resource sharing

Although the participants involved in the focus group acknowledge that, given Latvia's size, **"resources would need to be pooled"** and universities could work more closely together, there are difficulties in practice. The cooperation between the universities necessary for the development of a new, prospective study programme has not really taken place in the first year of studies, the representative of the enterprise concludes. However, co-operation between higher education institutions, also in digital format, could promote the acquisition of specific knowledge in areas where there are few specialists in Latvia.

Policy makers think that resource sharing is a very important area of cooperation for Latvian higher education institutions, especially in the sharing of various digital resources, which needs to be promoted. A programme is currently being developed in which (1) the study process will provide an opportunity to choose courses or modules for students from other faculties or universities; (2) investments in the digitalisation of higher education will include cooperation in the use of infrastructure: the creation of common platforms and the creation of common content; (3) institutional development strategies should include a vision of models for inter-institutional cooperation to ensure that these objectives are met.

5 Other themes

5.1 Privacy and data security

Skills and knowledge to ensure security in the digital environment are essential for everyone and at all levels of education. Participants in the discussion think that data security and data privacy should be taken much more seriously, which also requires more financial investment and attention at the institutional level.

At the same time, students acknowledge that a number of measures **regarding security in the digital environment** have taken place remotely; the university has updated its guidelines on the purpose of data use, but in general, *everyone should think about it, not just at the university, but more broadly,* students think.

5.2 Other aspects of law

In focus groups, a discussion developed on other aspects of law that should be taken into account both in the study content and in the development of a new field of law, such as **technology rights** and their threats. It is accepted that if it is an offence in the analogue environment, it is also an offence in the digital environment, but there are areas where it is not so clearly defined. *E.g. sensor data, self-driving machine offences. AI will develop even more, thus it is important to develop this area of law as well, even though it is still in the future; but robotics is already present and several issues related to it are not legally resolved,* says the lecturer sharing her thoughts.

The aspect of privacy in the execution of production processes will become relevant **in labour law**. *During Covid-19 many plants were equipped with video equipment for the video surveillance of work processes. In this case, the aspects of employee privacy are not fully defined, nor are specialists in companies educated on these topics*. At the same time, this is already being addressed in companies, and protocols have been developed. Representatives of companies believe that such legal aspects should be included in the study process in the training of young specialists*. For future employees, this may be complicated, legal aspects will change and evolve, but the entrepreneur's right to ensure an efficient and safe production process must also be taken into account.*

Along with the development and availability of study courses in the digital environment, **the issue of copyright** has become topical. The members of the discussion group agree on the free access of study courses to all that have been developed using public funding, with users referring to the authors.

Students think that the development and availability of such study courses should be promoted more widely, but lecturers admit that when it comes to self-developed courses, it is an undisputed issue, expressing the opinion that **intellectual property rights should be settled**.

5.3 Digital processes of studies and internationalisation

This theme was not widely covered in focus groups. Students agree that guest lecturers both in Latvia and abroad can improve the educational process, and it is convenient for everyone; there is no need to devote time and resources to travel.

The lecturer has experience in international cooperation in the Moodle environment, *which has long allowed the integration of study courses with other universities and development of cooperation.*

Policy planners think that, in general, Latvian higher education institutions should pay much more attention to this aspect, especially taking into account the development of various types of mobility (including blended) in the EU programme "Erasmus+".

5.4 Digital campus

This theme was discussed in the student focus group. *In the digital campus, it is necessary to understand what students, lecturers and administration need, and then to create solutions together – environment, design and functionality. In order for everyone to feel like they belong, it is necessary to have a closer connection between different levels of university management*, the student thinks.

Students would like a digital campus, so they are able to engage in the internationalisation processes and study without being in the country and at a time convenient for them. Digital campuses could also be set up for further education, for those who cannot attend full-time studies.

5.5 Psychological acceptance of change

Recognising the digital world not only requires change; digital solutions must also be successfully implemented with the right and effective solutions.

The student thinks that the digital world will definitely be and needs to be implemented, but it cannot be implemented quickly. Industry representatives mentioned *that the very rapid changes in the environment had to be taken into account when setting up companies, and there were other circumstances. Learning takes place through the process of doing*. Students think that Latvian society is divided, and in general we have a relatively low level of digitalisation, but everyone will have to digitise. Accessibility of services is important for all, so the transition to digital solutions should be gradual.

It is difficult to judge what changes are needed for digital change to be embraced. There are lecturers, there are not many of them, but some do not want to admit it. There are people who want to learn and change regardless of age and there are those who do not. However, over time, the digital world will have to be accepted by all, although for some it will be very difficult, students believe.

In general, the adoption of change is the first step in avoiding a deepened digital divide in society, so different educational courses are important for all groups in society, with the active involvement of educational institutions themselves. Society as a whole and those involved in education should also think about the development of digital culture and the creation of positive experiences in the digital environment.