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**Experiences concerning digital transformation of the higher education**

**on personal and institutional levels**

Abstract:

The digital transformation of higher education can be increased both on an institutional level and on a personal level. The different levels can be evaluated as quite independent from each other. This means one single person, or a relatively little group of persons can also initialize and maintain highly digitalized education services, and it seems to be trivial that organisations/institutions should always be capable to increase digitalisation of the higher education. Digitalisation is not a question of technology – it is a kind of philosophical challenge. Digitalisation is not the goal, the aim, the objective – digitalisation is a tool for other purposes like supporting COVID-conform lifestyles or even green movements in the economies, however, simultaneously maintaining the humanized and personal aspect of teaching to develop.

Keywords: competencies, requirements, necessities, adaptation, flexibility, responsibility, motivation

# Introduction

The following comes from the documentation of the OECD project:

*“This document provides an overview of the goals, schedule, and guiding questions of the upcoming series of institutional roundtables with higher education institutions in the context of the EC-OECD Project “Supporting the digital transformation of Hungarian higher education” funded from the Structural Reform Support Programme of the European Union.*

*The EC-OECD project “Supporting the digital transformation of Hungarian higher education” funded from the Structural Reform Support Programme of the European Union aims to support Hungarian authorities in enhancing the digital transformation of higher education. Digital transformation holds potential for the improvement of quality, equity, and efficiency in higher education, and can affect every aspect of higher education, from teaching and learning, student support, institution and facilities management to evidence-based decision and policymaking.*

*The work will build on existing reform efforts and feed into the revision process of the current Hungarian strategic framework, in particular the action plan of the 2016 “Shifting of Gears in Higher Education” midterm policy strategy and higher education development programmes in the 2021-2027 programming period. The project will provide recommendations for assessing the digital readiness of Hungarian higher education institutions as a basis for future strategic planning and intervention design. The project runs from July 2020 to October 2021 and includes several stakeholder engagement activities, such as fact-finding missions and workshops, designed to provide the OECD team with an understanding of stakeholder needs, expectations, and experiences.”*

The above formulated aims are important, and the below listed questions affect the holistic system of higher education – therefore the answers are worth publishing in the classic form, too.

# Questions

The following questions (question-groups of the OECD project) will be answered on two levels: on the individual level (based on IT-related education experiences) and on the institution level in order to demonstrate that IT-relatedness as such ensures an efficient digital transformation without any further expectation concerning the legal frameworks:

## Public policy and institutional framework (PPIF)

*“Are there policies and strategies (international, European, national, institutional) that you think have contributed to increasing digitalisation in your institution? Can you identify any policy barriers to further digitalisation?*

*What channels, forums, and which actors have been or could be effective in gathering stakeholder perspectives on the topic of digitalisation in higher education, and conveying them to national and institutional policymakers?*

*To what extent and in what format digitalisation is considered when making educational and management decisions in your institution?*

*What are the expectations, needs, and challenges related to digitalisation in higher education from your vantage point? Are these, in your opinion, shared and/or known by other actors in the system?*

*What has been more and less effective in promoting digitalisation at the level of your higher education institution? How have you – or could you – contribute in that regard, given your role in the institution?*

*Have you experienced and/or do you know of alternative/new ways of utilising digitalisation in higher education (e.g., student services, third mission activities, intra-and interinstitutional collaborations)? In what areas does digitalisation have an innovation potential in higher education? “*

## Infrastructure and data (ID)

Does your institution have dedicated staff responsible for developing and managing digital infrastructure and equipment (e.g., broadband access, computer and mobile devices, Learning Management Systems, etc.)?

If you are in a position to make decisions on investing in digital infrastructure, what elements do you consider when making these decisions and what could help you in this process?

Do you know the extent to which digital infrastructure solutions are shared across departments in your institution? Do you know if your institutions share any digital infrastructure solutions with other institutions?

Digital processes in higher education have the potential to generate a large amount of data, including on teaching and learning. What type of data does your institution currently collect, and for what purposes (e.g., to fulfil national requirements, for institutional improvement, etc.)? How do you think data currently inform student support and decision-making in your institution?

## Teaching, research, and engagement (TRE)

*“What resources does your institution make available for the pedagogical and professional development of teaching staff? Do you consider your institution well equipped to develop and provide such support or would third parties (e.g., market players or a government entity) be best suited to do so?*

*What components of teaching do you think have been most and least successful in the digital space (e.g., assessment, student support, in-class teaching), and why? What has been your institution’s experience with respect to “moving online” courses in applied areas typically requiring in-person activities?*

*How is academic teachers’ workload split across teaching, research, and engagement at your institution? What do you think are factors that currently encourage or limit the interest and ability of teaching staff to engage with digital teaching and research?*

*How have quality assurance and accreditation procedures facilitated and/or hampered the mainstreaming of digital teaching?*

*Do you see any potential disadvantages or negative impacts of digitalisation on the teaching process and outcomes that should be considered when developing public policies/institutional strategies?* “

## Learning processes and outputs (LPO)

*“What components of learning have been most and least successful in the digital space (e.g.: independent study, faculty support, peer-to-peer collaboration) – and why?*

*How do you view the impact of digitalisation on the access and success of different types of students in higher education? (Please consider multiple demographic variables including* *domestic and international students, younger and older students, students from different social, economic, and cultural backgrounds as well as their geographic location, among others.)*

*Are students able to obtain credits for learning completed in institutions other than the student’s home institution? Have you considered taking advantage of digital learning to expand the number and diversity of learning opportunities available to students (e.g., micro-credentials)? If so what opportunities and challenges have you encountered in doing so?*

*How do you view the impact of digital tools on the skills and labour market outcomes of graduates? Have you tried to meet the demands of labour market actors through digital solutions – if so, how so, and what benefits and obstacles did you face in that process?*

*Do you see any potential disadvantages or negative impacts of digitalisation on the learning process and outcomes when making public policies/institutional strategies?”*

# Answers

This chapter presents the answers to the 20 question-groups based on experiences of IT-oriented teaching for 30 years. IT-oriented teaching is a method where the focus of teaching is based on the KNUTH principle (where knowledge is what can be transferred/transformed/translated into source code – each other human activity is a kind of artistic performance):

## On a personal level (with IT-focus)

1. Policies and/or strategies have never been a barrier on a personal level. The freedom of teaching in universities has always been a given (c.f. 30 years). Artificial intelligence-based (automation-driven – KNUTH-oriented) education goals could always be realized on the given IT-level. The KNUTH-orientation as such is a kind of digitalisation (of the education). Therefore, the proper focus on KNUTH has always been enough as a compass. Barriers could only be identified in the human brains because of statistical learning (c.f. human ethology), where the human brain can only see such a phenomenon that the human/social environment let it see/interpret. The AI-based seeing is becoming more and more attractive year by year because the examples around the Students (and teachers) have an increasing trend.
2. Based on the answer to question Nr.1, the education of the teaching staff is the only relevant approach where the objectivity of the teaching success should be made measurable – like in case of the machine learning processes. Machine learning cannot be executed without a definition of the ideal/final objectives. Human society needs the same strategy, and human beings should be at least as consequent as machines (built by humans). It means that the best practices should be adapted more effectively, more efficiently (=faster and never in a lower effectivity than in the best practices before). The education systems (the policy makers) are responsible (therefore) for the speed of the adaptation of the best practices and the decreasing level concerning their efficiency. The teaching staff cannot be arbitrarily demotivated in these adaptation processes. Ineffective and/or inefficient patterns are dangerous for the digitalisation of education. Teachers should always be masters in the digitalisation processes compared to the given students. The innovation of the teaching methodology (especially the integration of the KNUTH principle into each discipline) is the “medicine” if we really want a better digitalisation in education.
3. Based on the KNUTH principle, digitalisation is the focus of each teaching activity. Therefore, the extent is unlimited, and the format is arbitrary.
4. To be a follower of the KNUTH principle defines objective needs, expectations, challenges – without needing subjective validations by other persons.
5. Digitalisation should not be promoted as breathing should not be promoted for human beings. Digitalisation is the channel where and why knowledge should be processed.
6. The path taken with the KNUTH principle is innovation itself and the alternative compared to the canonized world with its naïve and/or corrupt parameters. It is important to know: Nobody without their own experiences about the objectivity will be capable of interpreting a KNUTH principle. It is never enough to hear about this principle. There is only one solution: learning by doing!
7. Nowadays, it is irrelevant whether an institution has or does not have any IT-equipment because the students and the teachers should have it. In IT-related education, the teachers should also have their own server functionalities – as we have had since decades. Let alone: The students create useful things (publications, databases, programs) which are published at once in our online journal/library/Wikipedia-service.
8. Nobody needs to invest into infrastructure – cloud services are not expensive –normal human life needs online rights and competencies. For education, it is enough to use the access rights and equipment elements being available for teachers and/or students. Our server costs 5 EUR/month for unlimited online activities (incl. online robots for modelling).
9. Sharing should affect projects, data, publications, enterprises, and knowledge – but not the cloud-based infrastructure. Projects, data, publications, enterprises, and knowledge are shared if the (human) partnership parameters make them possible. In an ideal case, patents could also be defined, and this output is regulated on a systematic level.
10. Based on our own (self-developed) online functionalities, we can collect data about arbitrary phenomena. In general, students are not really interested to work with their own data (since decades), which should be changed in the long term. We could even measure EEG-patterns (like in parallel start-up projects), but this seems to be enough to work with public (e.g.: statistics, GoogleTrends, etc.) and/or data from enterprises (incl. special agreements). Log-data from CMS/LCMS and their analytical potentials are always demonstrated – but the students cannot really interpret/accept a log-based and objectivity-oriented evaluation system. Unfortunately, this experience is still valid in case of the whole society – the question is: for how long? The cultural level of the data-driven decision-making is in general low –education based on the KNUTH-principle has to change these social positions –, but the process is very slow. Therefore, a real digitalisation process cannot be faster than the changing process as such in society. It cannot be excluded that crowds without real connections to AI will be existing in a robotized world – because the human psychology in general seems to be on a deep level resistant concerning objectivity.
11. Teachers in an idealized digitalized education system have to follow the auto-didactive learning patterns. Namely, it is the real LLL (life-long-learning). Students should also be educated to be capable of self-regulated learning. The classic learning patterns, where the learning material is given, and the learning strategies are also prescribed are simply inefficient where society needs innovation. The real LLL needs personal will, because the Internet offers unlimited information. The increasing acceptance of objectivity would be a catalytic impact, because objective evaluation lets people define/derive realistic goals on personal/team/institution/societal levels. Therefore, the questions about supporting force fields point to the illusion of external responsibilities. The responsibility (for an effective and efficient LLL) should be in each person. Based on theories: Teaching can be seen as a process where the teachers search for given characteristics in the Students. Characteristics which are not given in a person can never be implanted into the personality of a Student. Real digitalization has an upper limitation (through genetical background). On the other hand: it is always a possibility to search for new methods being capable of increasing responsibility levels in arbitrary persons. Not to search for new methods is ignoring responsibility.
12. The digitalisation of education is fundamental for the future of education. The COVID-situation may only be seen as a kind of training. The effects of digitalisation are strongly individual, and concerning the digitalisation, the individual skills change very fast (see the increasing trends of Internet-traffics). Digitalized education needs less infrastructure like buildings, it generates less traffic, produces less CO2, etc. Digitalized learning materials need no paper (c.f. concerns the environment in a reduced level). The face-to-face transactions may not be eliminated, but its forms and quantities should be optimized in the future. The online courses without face-presenting (video-streaming) catalyse real problems which can be solved if the learning materials can be downloaded and interpreted in advance by the Students. It means only REAL PERSONAL ACTIVITIES (e.g., discussions) should be organized as real time actions.
13. In an ideal case, teaching-research-engagement-ratios are not derivable because there may not be any classic teaching parts in the daily activities where classic teaching means speaking about the opinion of others without critical control (research) about their appropriateness. The education system should be observed by teachers as a research topic; therefore, teaching is part of the research. On the other hand, teaching show research activities with Students and/or for Students - live. Only the interpretation of the personal responsibility concerning LLL (of Students and/or teachers) can be seen as a kind of catalysator. It is not good enough if teachers may say teaching as such is not focused (in frame of the research activities). It is irrelevant what the direct focus of a research activity is. To teach about any focused phenomena should be always relevant – even if in a virtual setting (e.g., for virtual Students). Publications are also cases of teaching – therefore the derivation of the parameter of an ideal publication interprets research and teaching as two views of the same thing.
14. If log-based objectivity is important in the daily business of the education system, then quality management is part of the objectivity-related self-analyses. The official accreditation is unable to work log-based, therefore, the canonized accreditation is, unfortunately, just a sort of theatre.
15. Each change (meaning the increasing volume of digitalisation of education) causes unlimited further changes. A part of them is acceptable/good/wanted – another part is a kind of side-effect – not planned, not preferred. It may not be denied, and nobody wants to deny that the personal contacts can catalyse the learning success. Distant marriage is not the same as the daily co-operation of the partners in face-to-face-form. The learning success based only on distant education must be lower than distant education + personal contacts. The real question is here and now: is online communication capable of substituting face-to-face actions in an educational system? Being married and having a teacher cannot be the same. It is important to highlight that the Student-Student interactions are sort of knowledge transfers. Each form of knowledge transfer (like Student-Student-interactions and/or Teacher-Student interactions) has to be evaluated with the same methodology. The co-operation of Students can be catalysed in an education system, but the Students are responsible for their own co-operation strategies. If Students only co-operate if there is a prescription of the education system for teamwork, then this education system has a massive error concerning the preferred sovereignty of Students. Autodidactic learning expects that Students want to learn from each other and they want to teach each other (c.f. <https://miau.my-x.hu/miau/261/5percent.pdf>).
16. Digitalisation makes the real learning processes of willing Students more rational. The consequence is trivial: Students can deliver better performances (c.f. <https://miau.my-x.hu/bprof/2021/bme_tav_hatas.png>). The asynchronous interpreting of learning material (meaning the potential repetition of relevant parts or even the highspeed interpreting of less relevant parts) leads to a more efficient time-management. Each synchronous activity generates mostly problems on the levels of the individuals. Furthermore, examining cannot be fascistoid (meaning that Students can use/involve each appropriate supporting tool/source instead of time-limited, tool-limited face-to-face solving processes, like in the real business life). Each examination is fascistoid where the rules/limitations are only given in order to frustrate the Students. Examination parameters should be close to reality. Sport performances can really be enforced through arbitrary (e.g., inhuman) trainer strategies, but teaching is not the same as training/sport. LLL is a life-management issue and sustainability is the only relevant aspect. Extreme sport results are peaks and cannot be and must not be sustainable. Sport and teaching may not be treated as the same. On the other hand, objectivity is hard enough if a Student wants to see its own reflection in frame of the log-data. Human beings can be animals; and? systems can be optimized, and they follow rules which are observed objects of finetuned quality management approaches.
17. Digitalisation concerns a set of skills and/or competences which are more and more relevant part of daily life. Therefore, it is trivial that some Students will have problems (c.f. access to the university) because of economical/social backgrounds, but these problems can be treated fast and efficiently if the affected Students have the will. The same logic is valid for success, but here genetics can play a massive role (see before). Cultural disadvantages can be treated relatively fast and efficiently – genetical types are to respect and each type should have the chance to find and define niches in the society. It seems to be trivial that a new watershed is now given parallel to humanities and sciences – the genetic types concerning the IT-related points of views. It would be better if IT-orientation could be interpreted as a part of the cultural differences. The question is whether the inclination to humanities and/or to sciences could ever be harmonized in an arbitrary way in case of each human individuals. The same answer will be also valid concerning the IT-relatedness of human beings.
18. The term institution-related credits/diplomas is not modern enough. MOOCs demonstrates a clarified strategy: everybody could collect valid certifications independent from classic institutions/universities. An appropriate set of certifications should be transformable to a diploma. Therefore, the digitalisation of education will make it possible in long-term that only the certifications are relevant, and institutions will only be existing to support Students (like psychologists).
19. In case of a creation-oriented education where the KNUTH principle is the core it is trivial that the Students are educated as their own employees for their own projects. Therefore, digitalisation is always and at least on that level that can be identified in the project world. It is well-known that an IT-related project needs a high level of digital skills and competencies.
20. Digitalisation/virtualisation is a sort of rationalisation because of environmental challenges and economical trivialities. The world will be and should be more and more complex if more and more individuals are integrated into the system. The keyword is always: responsibility. Nobody is right to say in a trivial way: s/he had no chance to do things in another way. Everybody has the responsibility for their own decisions. Willingness can be supported – self-destruction strategies cannot be avoided by others.

## Personal level with a language focus

From among the four major groups the number of questions has been reduced to four questions inviting a broader outlook and overview.

The following answers listed have been collected from the personal experiences of the teaching staff at Kodolányi University, Department of English Language and Literature in Budapest, Hungary.

## Public policy and institutional framework (PPIF)

## Infrastructure and Data (ID)

How and in what manner did your higher education institution provide aid and help to its colleagues and teaching staff?

- The institution was fortunate in that it had previous experience in distance education. This meant that the transition to digital education due to the pandemic was relatively smooth. There were already measures in place whereby we, the lecturers had access to the software for teaching, although the software did have deficiencies since it was primarily designed for business meetings and not for education purposes. The main drawbacks were the lack of breakout rooms, although this could be solved with a cumbersome work around, and that we could not play audio or video recordings which was a major impediment to effective language, cultural, and content courses. The advantage of this particular software was that the IT support administration could allocate the meeting rooms dedicated to each subject and it was very easy for students and staff to simply log on.

The institution supported the process both for the teaching staff and the students by providing helpful workshops on how to use the software and training materials that worked through the issues step-by-step. I was involved in offering online examinations as well and the support that we received from other departments.

The IT specialists were very pro-active, and we were able to learn about the possibilities of creating materials designed to measure proficiency online.

In addition to this, the IT support staff and the pedagogical department were available to answer our questions to make suggestions on the best way to solve particular issues and also to access for real-time help when a teaching situation problem arose for one of the students or for the teaching staff. I cannot praise them too highly.

- As before the pandemic there had been further training focusing on how to use the Skype for Business platform, the switch to online teaching at Kodolányi university was quite smooth. The links for our classes were all provided by the school, and it was easy to find them for teachers and students alike. In case anyone had any difficulties, there was always someone we could call. I even had a week and a half when I was in quarantine and the students were at school, and that scenario was also quickly and proficiently handled ó. However, in general, I also did not have many difficulties (I have a working PC, good internet, a camera, and even a microphone), so I do not know about the experience of those colleagues who might lack any of these devices. I believe it was also possible to teach classes from the university building during the second wave, which can be a good solution for those whose internet connection is less stable or who do not have enough privacy at home to teach classes comfortably.

## Teaching, research, and engagement (TRE)

To what extent was digital teaching cumbersome? What were its positive and negative features and/or experiences?

- As for the evaluative questions: digital education is wonderful in the sense that we were able to continue the educating process even though we were not able to share a space with our students. On the other hand, it is limiting in many ways. Most obviously in the lack of being able to see all the students and creating a dynamic in the classroom. The problem with differing levels of digital literacy and equipment on the part of the students and the teachers made everything more difficult. Learning is much more tiring, so the timetable designed for on-site teaching was way too taxing online.

- As with everything, there are advantages and disadvantages of online teaching as well. What was (and is) the most difficult and problematic is choosing the right examination method. Last semester, we had several issues whereby the students were more inclined to use outside (online) sources while taking an exam if it was a written exam conducted online. As a result, this semester we rather have oral exams, where there is less probability of cheating. Still, cheating cannot be completely avoided. Another difficulty is motivating students to participate in oral discussions, especially in bigger classes. While I had no problems regarding active participation in smaller groups, in classes with more than 10-15 people it was usually just a few of the students talking, or sometimes awkward silences, as no one really wanted to start the discussion. However, this situation has improved as time has passed: probably students had to get used to the new situation as well. Also, Zoom helped a lot in initiating group discussions with the use of the 'breakout rooms' feature. To mention a few advantages as well: those who were sick or live far from campus have found it more comfortable to attend classes, and by uploading all documents used in class, no one could 'lose' or miss handouts and important deadlines.

- Mentally, it is hard to bear sitting in front of a computer for long hours, this is taxing to the brain and the eyes. Students say the same. It is good we do not have to travel to work, at the same time is harder without colleagues and students. New materials and tests had to be made with short notice. The efficiency of digitalised education is rather low.

- It is an awful burden to those who take it to heart. Just one example: it is many more hours to give feedback to a simple piece of homework, which may be overviewed within the first few minutes of in-person class time. It is simply boring and ineffective if it is carried on as if classes were merely moved to an online space. Educational experts have been giving advice as to how to re-evaluate the entire teaching-learning process. This is mostly ignored in higher education (where full classes are held), whereas much better observed in basic education (where shorter and fewer classes are offered for consultation and task-based instruction takes place). Classes should be shorter and activities different entirely. With the pressure to have full classes, there are health issues such as deterioration of eyesight, and inflammation of joints. Students cannot pay attention for hours on end.

The main negative effect is the removal of personal experience, lack or delay of feedback, resulting in the decrease of motivation.

Without learning how to replace exams with effective online projects, evaluation is difficult and does not reflect the student’s knowledge.

Further, there is no incentive. People expect that teachers will buy their tools, train themselves, and that they will put five times more work for the same amount of money and for absolutely no social or professional appreciation. It does not occur to them that all tools must be developed anew.

Positive sides are that a meeting or discussion can be more flexibly arranged over the net. This is the single thing that I personally appreciated. Also, working students taking weekend courses, and also students commuting from faraway locations, are much more active and are able to participate in much higher percentages.

## Learning processes and outputs (LPO)

To what extent were learning outcomes adjustable to digital teaching? Which of the competences are suitable or not suitable for digital teaching?

- This form of education is suitable for disciplined, self-motivated students who are capable of autonomous work. As we have seen in past years, this is more probable in the case of part-time students who have work experience which they can leverage to manage their student experience better. Students coming directly from secondary school need more mentoring. In a real classroom setting, the students feel secure enough to take risks and engage in lively and active learning and participation. For my part, I felt that some students liked the lockdown situation too much - I felt that there were incipient health mental health issues as some were becoming withdrawn.

Generally examining is really challenging online. Even the best of solutions means that some students will be negatively impacted, whilst others may break the honour code.

- I think independent learning, critical thinking, and creativity can be easily developed online as well. On the other hand, communicative competences and cooperation are certainly more difficult to develop via Skype for Business; perhaps a bit easier with a platform (Zoom, Teams) where students can work in groups.

- We can use frontal teaching quite well, but that is basically all. Lectures and seminars can be kept interactive to some extent. Our system does not support pair-work, groupwork or any other setup. It is quite impossible to give tests, which would be important in a language major. Students cheat a lot. The whole syllabus has to change to make it somehow digital, and that is too much to do without being given ideas how to do it.

Group projects were generally most appreciated by students.

Pair-work was not made possible during class and the discussion of issues is generally more difficult, with only a few students active.

Presentation skills were no problem, and even introvert students were able to give good presentations.

Written exams are more difficult to be enacted and may not reflect students’ knowledge properly. Oral exams and open-book written exams are more realistic means of measurement, but they must be developed by the teacher.

There is diversity regarding ICT competence, and for teachers to develop, training is required. This is because digital teaching requires new teaching skills. Student feedback is very important, and teachers may rely on this in planning and designing skills. However, one should not forget that we are human beings who require social contact, and most students, but also teachers, miss the sense of being together.

Digitalization depersonalizes. The negative side of digital teaching, because it is a new didactic situation, has increasingly influenced learning motivation. The motivation of students has noticeably suffered since the oncoming pandemic. Students have become “lazy” in the sense that they are late for classes, and the regular routine of getting ready to start the day seems to have suffered as well. Furthermore, there is a noticeable aimlessness and purposeless that the present situation of the lockdown, turbulence, and fears of the pandemic brought on. Therefore, digital transformation in higher education should and must consider the human side of teaching enabling the restructuring of the “work order” of teachers and the time scale of classes (considering the shortening of lectures and seminars while allowing for an increase of shorter contact hours) in order to create a healthy balance between the personal and the digital.

## On an institutional level

# Questions

The following questions (question-groups of the OECD project) will be answered on two levels: on the individual level (based on IT-related education experiences) and on an institution level in order to demonstrate that the IT-relatedness as such ensures an efficient digital transformation without any further expectation concerning the legal frameworks:

## Public policy and institutional framework (PPIF)

*“Are there policies and strategies (international, European, national, institutional) that you think have contributed to increasing digitalisation in your institution? Can you identify any policy barriers to further digitalisation?*

According to the Hungarian Higher Education Law, it has been possible to offer distance learning for about 15 years. The number of contact hours in distance learning should be less than 30% of the number of contact hours in the full-time course. Of course, according to the law, electronic teaching materials should support the course. Being a non-state HEI we have always been interested in alternative teaching methods and we were among the first HEIs in Hungary which used the mentioned possibility in the higher education regulations. We have offered some of our majors - mainly in the field of economics - as E-Learning courses since 2005. Based on the success of those courses some other majors followed, like Social Work BA or International Relationships BA. Thanks to this development, our teachers have gathered a lot of experience regarding the methodology of e-learning. However, when the COVID pandemic broke out, all our teachers had to switch to e-learning quickly. Compared to other universities, it was a relatively easy process for us. We had already: suitable infrastructure in hardware and software (Moodle and Skype for Business), and what is even more important, a rich experience in distance teaching and learning. At the end of the first lockdown (June 2020) more than 600 students took the final exam online with no serious problems. Hungarian HE regulations - also the temporary ones because of the pandemic situation - are efficient enough.

*What channels, forums, and which actors have been or could be effective in gathering stakeholder perspectives on the topic of digitalisation in higher education, and conveying them to national and institutional policymakers?*

Sharing good practices, further training courses for teachers nationwide but also on an international level, and creating channels between software development companies and teaching staff would be useful. E-Learning applications should be easy to use and psychologically suitable for a joyful learning experience. Policymakers should encourage these activities.

*To what extent and in what format digitalisation is considered when making educational and management decisions in your institution?*

*What are the expectations, needs, and challenges related to digitalisation in higher education from your vantage point? Are these, in your opinion, shared and/or known by other actors in the system?*

*What has been more and less effective in promoting digitalisation at the level of your higher education institution? How have you – or could you – contribute in that regard, given your role in the institution?*

Digitization in all possible areas is now the top priority in our university. We have seen that much more is possible than we imagined. Even our jazz students could take the exams from home with sound and video. We also experienced the boundaries of E-Learning: playing music in the group simultaneously is technically not possible, because of the delay of the streaming software. We had problems with the implementation of some pedagogical procedures (group work, working and discussing multimedia files simultaneously, e.g.) and experienced that there are solutions for them but not in the software we implemented. On the other hand: the other applications, which seem to be better in some respect have problems and can cause other types of difficulties. Zoom is very popular and easy to use but unfortunately quite costly - not to mention the meanwhile more or less eliminated security issues. Teams seems to be overcomplicated, considering the fact, that we use Moodle as a content management framework. Digitalization is a continuously changing field, and it is a challenge for the teachers just to be aware of these changes. They simply want to work with the students effectively and not always rethink methodological solutions because of the continuously changing applications.

*Have you experienced and/or do you know of alternative/new ways of utilising digitalisation in higher education (e.g., student services, third mission activities, intra-and interinstitutional collaborations)? In what areas does digitalisation have an innovation potential in higher education?*

During the lockdown nearly all departments started webinars dedicated to specific research topics. Initially we just wanted to “replace” planned conferences with these webinars, but we opened them not only for students but also for the public and recognised quickly that this corresponds to our third mission activities too. Also, intra- and inter institutional collaborations could be improved with online events.

## Infrastructure and data (ID)

*Does your institution have dedicated staff responsible for developing and managing digital infrastructure and equipment (e.g., broadband access, computer and mobile devices, Learning Management Systems, etc.)?*

We have a group of 5 IT specialists managing the IT infrastructure and supporting online teaching. This includes all the mentioned areas. We have been using Moodle as LMS since 2005 combined with MS Live Meeting followed by Skype for Business and now Teams. The IT support group is working in collaboration with the Centre of Higher Education Methodology. This was a conscious decision of the management: IT should support the teaching processes and therefore should be part of the mentioned Centre.

*If you are in a position to make decisions on investing in digital infrastructure, what elements do you consider when making these decisions and what could help you in this process?*

Decisions must be future oriented. It is very important to collect knowledge about new technologies and involve different and heterogeneous groups of stakeholders (teachers, students, employer) in the decision processes. In fact, we are considering building our relatively outdated network on the new 5G technology and are collecting arguments for and against from different point of views. For the teaching staff, it is essential to have an easy-to-use technology in hardware and software. This should be uniformized, as it makes supporting tasks easier if all the teachers work with the same type of laptops with the same software environment which can be supported centrally. Our short time goal is to provide teachers a uniformized pool of PCs. This is also more cost effective and safer from the perspective of IT security.

*Do you know the extent to which digital infrastructure solutions are shared across departments in your institution? Do you know if your institutions share any digital infrastructure solutions with other institutions?*

All our teachers use Moodle and Skype for Business/Teams in their classes. Before the pandemic broke out, only half of the teachers used video conference software. We use the IT infrastructure, the network of the university and services of the IT group together. There is no cooperation/sharing digital infrastructure with other institutions.

*Digital processes in higher education have the potential to generate a large amount of data, including on teaching and learning. What type of data does your institution currently collect, and for what purposes (e.g., to fulfil national requirements, for institutional improvement, etc.)? How do you think data currently inform student support and decision-making in your institution?*

We have a centralized system of data management regarding the performance of the students. The management takes the generated data into consideration, reviewing happens yearly. One example for the usefulness of this process is the decreasing number of dropouts. We could successfully identify risk groups, change the learning contents, and review HRM regularly.

## Teaching, research, and engagement (TRE)

*“What resources does your institution make available for the pedagogical and professional development of teaching staff? Do you consider your institution well equipped to develop and provide such support or would third parties (e.g., market players or a government entity) be best suited to do so?*

KJU founded in 2012 a Higher Education Innovation Centre. The centre coordinates the innovation of the field such as introduction of portfolios into practice, development of higher education methodology material, and the workshops of quality and higher education methodology. In the last years distance and e-learning is getting more and more important. We also created a further training site on Moodle and we organize regular trainings for our teaching staff. This is an open platform for sharing good practices, too. Working on this platform is quite easy. If, for example, a teacher finds an interesting online tool, he or she can share this information with or without methodological comments via a forum post in the Moodle course.

*What components of teaching do you think have been most and least successful in the digital space (e.g., assessment, student support, in-class teaching), and why? What has been your institution’s experience with respect to “moving online” courses in applied areas typically requiring in-person activities?*

The classic task of the teaching process - providing knowledge about a specific scientific topic - does not suffer in digital and online teaching. Moreover, if we think of sharing knowledge as a primary goal of teaching, we can say that online teaching works perfectly.

*Do you see any potential disadvantages or negative impacts of digitalisation on the teaching process and outcomes that should be considered when developing public policies/institutional strategies?*

Any good teachers know well that teaching involves a lot of non-verbal elements, and in the sense of the constructivist theory of learning and teaching, learning is much more an inner mental process of building one's own perspective of the world than simply acquisition of knowledge. Body language, small movements of the hands, the dilation of the pupils in response to emotional states, in short, the non-verbal impacts of the personality of the teachers cannot be transferred in the conference software. This aspect influences teaching processes negatively. But there are also surprising exceptions: our jazz students were able to learn instruments online quite easily. In summary, we are in a completely new didactic situation. The main thing is that we collect, document, analyse, and share our experience. The institution can help a lot, the Centre of HE Methodology at the KJU is one example for this.

*What do you think are factors that currently encourage or limit the interest and ability of teaching staff to engage with digital teaching and research?*

Prejudices and negative attitudes towards online teaching are the biggest obstacles. These are very deeply rooted in many colleagues. In the opinion of psychologists, however, attitudes in adult persons cannot be really changed. Therefore, it would be a mistake to try to change this attitude. Instead, the management or the Centre must try to show small practical digital didactic solutions without the pressure from the management. Colleagues should enjoy the freedom of experiencing digital techniques.

*How is academic teachers’ workload split across teaching, research, and engagement at your institution?*

Teaching and engagement: 80%, research 20%. We are a university of advanced science. This explains the higher percentage of the teaching activity.

*How have quality assurance and accreditation procedures facilitated and/or hampered the mainstreaming of digital teaching?*

In Hungary, this field is relatively functional. HE Law makes digital teaching possible. The definition of a traditional lesson is, for instance: “it requires the personal participation of the instructor” - this wording enables personal participation not only in a physical space but also in a virtual one. Quality assurance and accreditation are also e-learning friendly in Hungary in my interpretation.

## Learning processes and outputs (LPO)

*“What components of learning have been most and least successful in the digital space (e.g.: independent study, faculty support, peer-to-peer collaboration) – and why?*

As mentioned above: the classical task of the teaching process - providing knowledge about a specific scientific topic - is not very deeply harmed in digital and online teaching. Moreover, if we think of sharing knowledge as a primary goal of teaching, we can say that online teaching works perfectly.

Peer-to-peer or group collaboration seem to work online, too, but there is the personal psychological factor missing. Presentation of homework or mini research given online work well.

*How do you view the impact of digitalisation on the access and success of different types of students in higher education? (Please consider multiple demographic variables including* *domestic and international students, younger and older students, students from different social, economic, and cultural backgrounds as well as their geographic location, among others.)*

I cannot see any serious differences between those different types of students. Digitization is so broadly anchored in the world of work that there are no longer any differences among students. The online platforms can also be reached with cheap equipment like a 3 year-old mobile phone.

*Are students able to obtain credits for learning completed in institutions other than the student’s home institution? Have you considered taking advantage of digital learning to expand the number and diversity of learning opportunities available to students (e.g., micro-credentials)? If so what opportunities and challenges have you encountered in doing so?*

We recognize and validate prior learning quite broadly. Theoretically, there is also a possibility to recognise achieved learning outcomes (for example MOOCs) absolved in other institutions. Unfortunately, nobody has used this possibility yet.

*How do you view the impact of digital tools on the skills and labour market outcomes of graduates? Have you tried to meet the demands of labour market actors through digital solutions – if so, how so, and what benefits and obstacles did you face in that process?*

# Other aspects

The Student organisation (like labour/trade unions – c.f. HÖK in Hungarian) can and should transmit/transform/translate opinions of Students to the teachers, institutions, governmental units. This chamber-like framework is appropriate in supporting Student activities – also in the field of digitalisation.

# Conclusion

The digital transformation of higher education can be increased both on an institutional level and on a personal level. The different levels can be evaluated as quite independent from each other. It means one single person, or a relatively small group of persons can also initialize and maintain highly digitalized education services, and it seems to be trivial that organisations/institutions should always be capable of increasing digitalisation of higher education. Digitalisation is not a question of technology – it is a kind of philosophical challenge. Digitalisation is not the goal, the aim, the objective – digitalisation is a tool for other purposes like supporting COVID-conform lifestyles or even green movements in the economies. Digital transformation in higher education should and must also consider the human side of teaching enabling the restructuring of the “work order” of teachers and the time scale of classes (considering, as a solution, the shortening of lectures and seminars while allowing for an increase of shorter contact hours) in order to create a healthy balance between the personal and the digital.