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Policies to support the digitalisation of higher education in Hungary

This chapter reviews current policies relevant to the digitalisation of higher education in Hungary and provides policy recommendations to remove barriers to digitalisation and establish support that could help foster its further development.

3.1. A comprehensive reform approach is necessary

If higher education systems and institutions are to make fully effective use of digital technologies, this requires comprehensive change in how institutions are managed, how teaching and learning take place, and how research is conducted. This in turn requires comprehensive change in how governments fund, steer, and assure the quality of higher education institutions.

A strategy for the digitalisation of a higher education system is, in fact, a strategy for the transformation of a higher education system. This means that the Hungarian government needs to strengthen some of the broader higher education reforms it has considered and initiated as part of its Shifting of Gears strategy, discussed in this chapter. It also means that the implementation of a digitalisation strategy for higher education needs to be carefully sequenced and accompanied with proper incentives to drive individual behaviour and institutional action.

The successful implementation of a digitalisation strategy for higher education requires four phases of action.

1. **Setting the direction:** This means understanding the needs and experiences of higher education staff and students, defining and communicating the strategy for digitalisation and developing a plan that will deliver on the strategy. It involves including the costs of digitalisation in budgets and ensuring there are tools for measuring digitalisation and monitoring success in achieving the goals and objectives of the strategy.
2. **Building the foundation:** This means providing and funding the digital infrastructure necessary to implement the strategy, including systems that allow for data to be collected, housed, managed and analysed. It includes, but goes beyond, digital infrastructure. It means ensuring there is a reliable network and the availability of skilled people to manage and maintain the infrastructure. It includes creating policies and standards, such as the requirement for interoperability of systems, uniform data quality processes and standards, and minimum hardware standards. To get value from the additional data generated by a digitalised higher education system implies ensuring that people are employed to analyse the data and communicate the analysis findings.
3. **Developing the processes:** Effective digitalisation implies changes in teaching, learning, research and engagement. This requires changes in both incentives and capabilities. Incentive systems – the funding of institutions and the remuneration and career advancement of individuals – need to be adapted to reflect the new opportunities, and the new tasks, created by digitalisation. Increasing capabilities requires a commitment to the training and support of staff.
4. **Delivering benefits to students, graduates and employers:** Lastly, an effective digitalisation strategy requires that all actors within the higher education system – students, research consumers, employers – benefit from digitalisation. For students, this means designing academic programmes that recognise learning outcomes from digital (as well as traditional) formats. It includes enabling students to have sufficient access to the information they need to support their learning. It means allowing them to study in flexible modes and ensuring that they graduate with the digital skills that employers want and expect of graduates in the 21st century. It also includes providing support for student learning and ensuring that delivery is designed to be interesting and enjoyable, as well as instructive.

For each of these four stages, the following sections examine the current state of policy in Hungary and then outline proposed policy recommendations. The four phases apply to governments – in their oversight of the higher education system – and institutions – in defining approaches to their teaching, research and engagement. This chapter focuses on government policy, which should be developed in close collaboration with higher education institutions (HEIs).

3.2. Setting the direction: The policy framework

Current state

Public authorities are responsible for shaping the institutional landscape of higher education systems, and steering priorities and incentives for substantially autonomous HEIs in ways that encourage them to educate skilled graduates and create value for citizens and taxpayers and the students who participate in the system. Governments influence institutions' behaviour through levers such as the funding system and legislative provisions on various issues ranging from academic employment to quality assurance. They also set broad objectives against which they can monitor progress.

In Hungary, the government has made digitalisation a stated policy priority, which, while not sufficient in itself, may be a prerequisite for encouraging digitalisation in the core teaching and learning practices of HEIs. Two government strategies running from 2016-to 2020 are directly relevant to the digitalisation of higher education in Hungary. First, the Digital Education Strategy (DES) provides a context for the focus on the digitalisation of education in Hungary (Digital Success Programme, 2016^[1]). Second, the Shifting of Gears in Higher Education strategy (Shifting of Gears) aims to promote the development of a higher education system responsive to economic needs, internationally attractive, and driven by competition. Action plans detailing measures the government aims to pursue accompany these strategies (MIT, 2016^[2]).

The Digital Education Strategy: A digitalisation strategy

The DES was developed to support the Hungarian government's national Digital Success Programme, a wide-ranging strategy that has as its goal "the digital development of the Hungarian society and the Hungarian national economy" as an enabler of "competitiveness, growth and welfare". The government sees the digitalisation of the education system as a prerequisite for the digitalisation of society, enhancing "the competitiveness and labour market chances of the upcoming generation" (Digital Success Programme, 2016^[1]).

The DES covers all parts of the Hungarian education system and aims to enable students at all levels in the education system to use digital tools and experience a digital study environment.

Higher education priorities in the DES

The DES seeks in Hungarian higher education a "standardised online digital environment" that will offer "personalised learning opportunities" delivered via "an online learning platform" where HEIs will present their teaching. In addition, HEIs will be expected to respond to employers', students', and society's digital training needs. The strategy acknowledges that digitalisation requires a change of culture and "... radical transformation of teaching-learning processes..." amounting to a "paradigm shift". However, it recognises that facilitating a culture change requires changing the system regulations governing teaching and learning (Digital Success Programme, 2016^[1]).

In particular, the DES identifies the need to increase the flexibility and diversity of provision as a priority for change in the higher education system. Thus, it advises to:

- Alter the legislation that regulates forms of teaching to enable online learning, as the current legislation requires a substantial amount of in-person delivery.¹
- Make instructional scheduling more flexible, enabling different delivery modes (such as online components, collaborative projects, etc.) to be scheduled appropriately. For example, the current regulation of the system of credits² prescribes the scheduling and frequency of lessons within a programme. This has the consequence of determining the number and scheduling of lessons that require physical attendance by students, with required provision of courses during the five working

days of the week and a minimum of 200 hours of contact time per semester for a full-time programme.

- Review the criteria for the performance assessment of academic staff,³ as current policies refer to “performance of the educational and research activity ... [and] ...other education-related activities” but make no reference to innovation or the use of digitally enabled learning approaches. The DES notes that to deliver on a change in the expectations and culture of the teaching workforce, the Hungarian authorities should develop additional criteria relating to digital educational methodologies.
- Make the structure of programmes and the programme change process more flexible. The DES recommends that Hungarian authorities change the rules⁴ relating to the structure of academic programmes with a “predetermined learning path”, which makes changes subject to ministerial approval. For instance, the DES notes that it would be desirable to strengthen the powers of the “educational programme manager” in the HEI, whose role is to ensure the content of programmes remains current. It further recommends that legislation provide the basis for programme managers to have continuous responsibility for making programme changes in a timely manner, ensuring the continuing relevance of the programme of study.
- Widen existing flexibility, such as choosing to recognise prior learning (Digital Success Programme, 2016^[1]).

The DES had an associated action plan that made several proposals to advance the digitalisation of higher education. The action plan recommended:

- The creation of the Digital Higher Education Competence Centre (DHECC). Now established, the DHECC is conducting projects directly related to the digital readiness of Hungarian higher education, such as two surveys of HEIs on digital higher education conducted in 2020 (DSN/DHECC, 2020^[3]).
- The easing of restrictions on HEIs’ procurement of information and communication technology (ICT) equipment.
- Changes to quality assurance, teacher performance review and other aspects of the current regulatory regime for higher education that currently impede the adoption of digitalisation to encourage instructors to use online channels.
- The adoption of open educational resources.
- A shift to enable students to interact with their HEIs’ services digitally.
- The further development of electronic education administration services, including a linking of administrative data on higher education, in order to reduce administrative burden for HEIs, ensure students’ learning paths can be traced and their certifications can be authenticated electronically, and enable better evidence for teachers and policy makers (Digital Success Programme, 2017^[4]).

Challenges limiting progress on strategic goals

The DES identifies some of the most significant obstacles to achieving digitalisation in the higher education system and areas requiring change. The DES is ambitious; the scale of change envisaged is significant. Thus, the DES acknowledges that the realisation of the strategy is “some way off” and that “... digital education is developing slowly and sporadically” (Digital Success Programme, 2016^[1]).

The current policy framework contains several obstacles that limit progress towards achieving the goals of the DES. With respect to funding, arrangements for part-time study remain rigid, despite improvements made in the *Korm. Rendelet a felsőoktatási intézmények alaptevékenységének finanszírozásáról* (389/2016 (XII. 2.)), the Government Decree on the financing of the core activities of higher education institutions, where section 2(7) envisages all part-time students as being the equivalent 0.5 full-time students, irrespective of the actual credit load. Part-time study can be organised as “evening” or

“correspondence” education in Hungary, teaching between 30% and 50% of full-time contact hours (DSN/DHECC, 2020^[5]). This contrasts with many OECD countries, in which part-time students can take variable portions of a full-time load, and study in classes alongside full-time students. In these systems, each course is assigned a weighting that reflects what portion of a year’s full-time load the course comprises (for instance 0.25 or 0.125). Each individual student’s load is the sum of the weightings for all of the courses in which the student is enrolled in that year, while the HEI’s load for the year is the sum of the loads of the students enrolled (Australian Government, 2021^[6]; New Zealand Government, 2020^[7]). Using this measure of “equivalent full-time student load” enables a precise measure that broadly reflects an institution’s costs in providing a course; it provides an equitable base for allocating funding, ensuring that the funding system can reimburse institutions on a pro-rata basis and support flexible provision for learners.

Accreditation criteria, such as the requirement that 75% of “core academic staff in a programme” be employed by the programme-owning university, in combination with legislative requirements regarding in-person teaching described above, result in high contact hours for students and high workloads for staff, together with a rigid and uniform programme structure (DSN/DHECC, 2020^[5]). These features deter programme design that emphasises online and blended learning.

Online availability of course materials for students is irregular, and their use by students is rare. Addressing this situation is seen as a priority by the government (MIT, 2016^[2]; DSN/DHECC, 2020^[5]).

In sum, there are many aspects of the organisation of Hungarian HEIs that do not reinforce or align with the DES (DSN/DHECC, 2020^[5]). Therefore, the DES proposes a paradigm shift in higher education, with a move to student-oriented learning (Digital Success Programme, 2016^[1]). A paradigm shift will require a change in behaviour – by those in leadership roles in HEIs, by those who train higher education teachers, by individual teachers and by students. While government commitment to the development and maintenance of infrastructure is necessary for the paradigm shift the government seeks, that commitment, in itself, will not change behaviour or culture. The DES does not discuss how to manage the required change or the processes and amount of time needed for that change.

Shifting of Gears in Higher Education: A higher education strategy

The Hungarian government’s higher education mid-term policy strategy, Shifting of Gears, is a key component of the policy framework in which the system operates. Given the extent of change required for digitalisation, Shifting of Gears is an important part of the digitalisation agenda in higher education.

Shifting of Gears proposes a set of goals and actions for 2016-30 that aim to transform the education, research and social development roles of higher education. The strategy also discusses horizontal issues such as institutional management, financing and priority fields of study (MIT, 2016^[2]). Shifting of Gears includes a number of references to digitalisation, complementing the higher education goals of the DES.

Shifting Gears priorities

Shifting of Gears sets out the government’s overarching goal for higher education as positioning the Hungarian higher education system so that it is internationally competitive and attractive, can respond to social challenges, and drives Hungary’s economic success. It notes that the system faces funding pressures after 2023, leading to an expectation that HEIs will look increasingly beyond government funding for their revenue.

Its vision of the system in 2030 is that:

- **Students will be better prepared** for higher education at the point of entry, there will be greater specialisation and personalisation of learning, and instructors will be better prepared – leading to

better retention and completion rates. Shifting of Gears also foresees increased participation and success rates in higher education among the Roma community.

- **Institutions will have specialised educational profiles;** there will be clear differentiation between the role of universities and the role of Universities of Applied Sciences (UAS), with a new third-tier higher education provider: community-based higher education centres, intended to promote development in their regional communities.
- **Institutions will also have well-defined research profiles** matching their educational specialisations.
- **Programmes will be more flexible** in structure (MIT, 2016^[2]).

To advance this longer-term vision, Shifting of Gears lists 56 objectives and performance targets covering education, research, service, funding as well as groups of fields of study. For instance, the strategy sets objectives for, among many other items: increasing the educational attainment of the population aged 30-34 years; increasing access to higher education; improving equity of access and achievement; and increasing the relevance of higher education to labour market needs (MIT, 2016^[2]).

The government also issued a higher education action plan accompanying the strategy (the Shifting of Gears Action Plan) that incorporates, among its 56 objectives and actions, 7 objectives related to digitalisation (see Box 3.1). The government committed to monitoring progress in meeting the goals of this action plan, with a framework that comprises monitoring performance (i.e. achieving the objectives of the plan), monitoring results (i.e. observing changes in data that result from the actions in the plan) and monitoring effectiveness (i.e. monitoring the outcomes that result from the implementation of groups of interventions) (MIT, 2016^[2]; MIT, 2021^[8]).

Box 3.1. Shifting of Gears in Higher Education Mid-Term Policy Strategy, Action Plan 2016-2020

Objectives relevant to the digitalisation of higher education

2.1.4. Making scientific, postgraduate specialisation programmes more flexible so that HEIs will be the location of life-long learning.

2.2.4. The teaching methodology used in higher education, in the field of education innovation, should be centred on practice and student work.

2.2.5. In order to increase instructor excellence, the performance-based promotion system of instructors needs to be strengthened, and the related conditions of competitive salaries need to be created.

4.4. Creating modern informational content and providing broad access to it.

6.1.1. Increasing the volume of medical training and reinforcing, consolidating and raising the quality of the clinical education base to assist in this purpose.

6.3.2. Utilising the opportunities offered by internationalisation, reinforcing competitive, foreign language economic training programmes, primarily in master studies.

6.5.1. Continuing the renewal of teacher training, with special regard to the renewal of its content and methodology, with the application of modern, pedagogical methodology instruments.

Source: MIT (2016^[2]), *Shifting of Gears in Higher Education Mid-Term Policy Strategy 2016: Action Plan 2016-2020*.

Challenges limiting progress on strategic goals

Shifting of Gears is comprehensive and ambitious. Like the DES, it provides a good summary of what needs to change if the opportunities afforded by digitalisation are to be realised. However, higher education institutional stakeholders interviewed by the OECD had limited awareness of the government strategies (see Annex A).

While the plan's actions are mostly well aligned to the objectives, it is significant that, in every case, the responsibility for action rests with government officials, rather than higher education institutions. Few objectives articulate a clear link to the institutions whose commitment to change is central to achieving many of the objectives. There are no actions that fundamentally change the structure of the incentives for HEIs or their leaders, yet incentives are essential to modifying institutional behaviour (OECD, 2020^[9]). Therefore, there is a high risk that Hungary will struggle to meet the objectives within the anticipated timeframes.

The plan includes indicative funding requirements for each objective. The seven digitalisation objectives within the Shifting of Gears objectives that include references to e-learning, digitalisation or online learning have been costed by the government at HUF 50.26 billion (approximately EUR 145 million), but it is not clear what period the amount is to be spent over. Also, many components of the seven objectives are not related to digitalisation. For instance, only HUF 10 billion of the HUF 15 billion linked to Objective 2.2.4 (relating to innovation in teaching) appear related to digitalisation. In Objective 2.2.5 (relating to training instructors), the e-learning component comes at no cost, while the full HUF 6.7 billion is for an international exchange programme. HEI leaders surveyed by the OECD for the project suggested that the government needs to provide additional funding for HEIs to support the development of digital infrastructure and data systems (see Annex B).

Sections of the draft monitoring report prepared by the Ministry for Innovation and Technology on the implementation of Shifting of Gears and shared with the OECD team discusses 16 of the 56 objectives and reports on actions taken and activities underway to help meet the targets (MIT, 2021^[8]). However, the document reports mainly on inputs and progress towards actions, rather than on results, without evaluating the implemented actions. That may be because the monitoring focuses only on 16 of the 56 objectives or because it is still too early to observe changes in the data in response to some of the interventions. However, it is difficult to assess the strategy's impact without a more comprehensive and result-focused monitoring framework that identifies a clear set of monitoring indicators.

Proposed policy recommendations

While the DES and Shifting of Gears have both signalled the government's determination to encourage change, they need to be joined up to adequate policy measures to make them effective instruments of transformation. However, at present, higher education stakeholders interviewed by the OECD team suggested that Hungarian institutions' finance, human resources, and other administrative systems are not yet adapted to support digitalisation. In particular, the employment, professional development and career progression arrangements for academic staff appear to limit the implementation of digitalisation (Annex A).

Below are examples from international experience that Hungary could draw from, and four policy recommendations that the Hungarian government, in close collaboration with HEIs, should consider adopting as matters of high priority to advance digitalisation in the higher education system.

Understand system-wide digital practices and needs to build a supportive policy framework

In the **United Kingdom**, information on the use of digital tools for teaching and learning during the pandemic has been collected and analysed to create a ten-year vision for digitally-led higher education. This "roadmap for quality in digital engagement" draws on the experiences of thousands of higher

education teachers and students across the higher education system. It can be used to develop a system-wide understanding of how digital technologies are used in higher education, and in turn help inform institutions' digital education strategies (Maguire, Dale and Pauli, 2020^[10]).

The **European Union**, through a project led by the **European University Association (EUA)**, is building on a school-level tool, the Self-reflection on Effective Learning by Fostering Innovation through Educational Technologies (SELFIE) tool, adapted to higher education (DIGI-HE). A first questionnaire was developed and sent to European HEIs, providing insights on barriers limiting the take-up of digitalisation. Information from that tool can be used to gain a picture of the digital readiness of the system (Gaebel et al., 2021^[11]).

In **Ireland**, the National Forum for the Enhancement of Teaching and Learning, supported by government funding, developed a comprehensive national survey of digital experiences in higher education with strong involvement of higher education stakeholders in the design and implementation of the survey. The Irish National Digital Experience Survey (INDEX) drew responses from more than 30 000 students, teachers, librarians and others across the whole system. The information drawn from the survey provided a common understanding of needs and challenges, in turn laying the ground for developing a shared vision of a digital higher education system among public authorities and higher education stakeholders (see (National Forum for the Enhancement of Teaching and Learning in Higher Education, 2020^[12]), Chapter 4 and Annex A).

Relevant policy recommendations related to developing a system-wide approach to higher education digitalisation in Hungary are as follows.

Policy recommendation 1: Create mechanisms to build (and regularly revisit) an understanding of higher education staff and students' digital practices, needs and attitudes to inform policy

- Gather information from HEIs to understand how higher education staff and students use digital technologies in higher education and how public policies and institutional strategies may support or hinder digitalisation in practice from a user perspective. Such information gathering should also be used to identify good practices in digital higher education at the institutional level. For example, a survey similar to the Irish INDEX survey could be considered.
- Strengthen communication and collaboration channels between government and institutions to ensure that higher education leaders, staff and students are aware of government policies – and of the funding provided for their implementation – and enhance the take-up and impact of these policies.

Policy recommendation 2: Review the regulatory and funding framework for digitalisation in higher education to encourage institutional strategies that support the take-up of digital practices among students and staff

The government should use feedback from higher education stakeholders to develop a system change plan designed to remove obstacles to the adoption of digitally enhanced learning, make legislative or regulation changes as necessary, and use funding incentives to encourage change in particular areas. This could involve:

- restructuring the institutional funding regime to ensure it is neutral between part-time and full-time enrolment and between different modes of delivery; giving institutions flexibility on scheduling and sequencing of delivery; and rewarding high-quality teaching and learning
- reviewing the accreditation and quality assurance practices and requirements (in the legislation and rules of the Hungarian Accreditation Committee, as necessary) to ensure they are neutral between different modes of delivery; and providing guidance to institutions on how to implement internal quality assurance processes in a digital environment
- working with HEIs to set employment conditions (including salary arrangements and staff supports) for higher education teachers that encourage them to engage in professional development that cultivates skills for delivering and assessing online learning

- working with HEIs to identify where capital grants to HEIs may be necessary to strengthen institutional digital infrastructure and data systems
- working with HEIs to identify where targeted funding to HEIs may help promote specific digital actions (e.g. fund teacher training) and where financial incentives could be designed to reward teacher training and upskilling, and excellence in the delivery of digitally enhanced teaching and learning.

Support HEIs, assisting them in further developing their capacity for self-assessment and improvement

The integration of policy priorities in the strategic planning of HEIs is not always successful. To facilitate this process, in the **United Kingdom**, the Quality Assurance Agency gathered examples of successful implementation of, and good practice in, online learning during the pandemic (Quality Assurance Agency for Higher Education, 2021^[13]). That synthesis summarises what was learned from the widespread adoption of digitalisation by a large number of HEIs, covering topics such as structuring fieldwork and assessment in a digital environment and using digital means to deliver theoretical content on line. Similarly, the **Irish INDEX** survey provided information on how institutions managed their digital planning (National Forum for the Enhancement of Teaching and Learning in Higher Education, 2020^[12]).

Institutions in **New Zealand** were encouraged to use an e-Learning Maturity Model, which enables institutional leadership to identify what they need to do in preparing to embed digital teaching and learning in their institutional culture (Marshall, 2012^[14]). These tools are essential aids for institutions in developing their digitalisation plans.

A policy recommendation related to providing guidance to HEIs to support their digitalisation planning is as follows.

Policy recommendation 3: Encourage institutions to draw on best practices, from Hungary and other countries, in planning for and rolling out the digitalisation of higher education

- Draw information from the information-gathering exercise referred to in Policy recommendation 1 to identify areas of good practice in digital teaching and learning, institutional digitalisation planning, HEIs' information systems strategic planning (ISSP), infrastructure management and applications of digitalisation in institutional management.
- Use that information on good practice to support the creation of user-led expert groups – for instance, of HEI teachers and ICT planners and managers who have successfully implemented digitally enhanced teaching and learning – to build best practice communities and act as advisors and resources for other institutions.
- Invite leading practitioners from other countries to conduct seminars and workshops for Hungarian higher education teachers.⁵ Support the dissemination of best practice examples through workshops, blogs, newsletters, videos, etc. Profile best practice, for instance, through a national excellence in online teaching awards system.
- Support expert groups so they can create resources to inform HEI planning – both their strategic planning and their ISSP developments.

Strengthen the monitoring of the intended outcomes of digitalisation strategies

Any strategy needs to be monitored. To monitor digital readiness, digital practices, and digital higher education performance effectively, the government should consider collecting data from HEIs on their digitalisation initiatives and the extent of digitally enhanced teaching and learning in their academic programmes. The types of indicators that could be considered will be explored in detail in Chapter 4. In general terms, this type of data could, for instance:

- provide a picture of the take-up of digitally enhanced teaching and learning – its distribution among institutions, types of programmes and student groups
- facilitate monitoring of student achievement in different types of learning
- complement qualitative survey data and the existing monitoring of progress in achieving the goals of current government strategies.

A small number of OECD countries have successfully incorporated indicators of online learning in their higher education statistical collections. For example, in the **United States**, the National Center for Education Statistics collects data on delivery mode as part of the Integrated Postsecondary Education Data System (IPEDS) and publishes trends in take-up of online enrolment in post-secondary education (Ginder, Kelly-Reid and Mann, 2019^[15]; Snyder, de Brey and Dillow, 2019^[16]).

Likewise, in **New Zealand**, all courses in post-secondary education are categorised according to the extent to which they use online delivery.⁶ Using that data, Guiney (2016^[17]) looked at the post-secondary system in New Zealand over nine years. The study showed that the performance gap was much smaller – almost negligible – among higher education (rather than adult education) students but was larger for some student groups, including part-time students.⁷ However, the study also noted that the performance gap decreased over the period of the study (2005-14), probably as teachers' and students' skills and experience grew.

While administrative data is essential to monitor progress on Hungary's digitalisation goals, it needs to be complemented by qualitative data. Change in the technology of learning that is not accompanied by a change in pedagogy (for instance, if online learning simply presents a version of traditional in-person delivery via notes and videos posted on line) is unlikely to boost learning or student performance. Therefore, monitoring progress on the strategic goals needs to include qualitative research into how online learning has been deployed. Such qualitative research would also capture examples of best practices that can then be incorporated into professional development for higher education teachers.

A relevant policy recommendation related to strengthening the monitoring of digitalisation strategies is as follows.

Policy recommendation 4: Design a plan for collecting and analysing data on digitalisation in teaching and learning

Fund an expert body to develop a data collection and analysis plan. Key steps in this plan include:

- Taking stock of the current state of administrative data collection in higher education in Hungary, identifying the policy purposes of new data collection and investigating the feasibility of adding data on the extent of online delivery to the characteristics of courses in institutional and government datasets.
- Identifying a set of indicators that would provide key information on digital readiness, practices and performance in line with government policy goals while taking into account constraints (e.g. capacity in HEI and government for collection and analysis).
- Developing strategies to ensure effective data reporting, such as clear definitions of online and hybrid learning courses and programmes (see, for instance, the work of the US National Center for Education Statistics to define categories of distance learning).
- Supporting HEIs in their data collection work.
- Working closely with policy makers and institutional leaders, design a plan for data analysis and use in public policy and institutional planning (see the example of the process used for INDEX).
- Identifying other information collection tools (e.g. student and teacher surveys, policy evaluations) to monitor the digitalisation of higher education; and co-ordinating with the work of the expert groups (see Policy recommendation 3) to gather information on the quality of the online learning on offer.

3.3. Building the foundation: Digital infrastructure and data systems

Current state

Public authorities play a crucial role in developing nationwide, high-quality, digital infrastructure that enables higher education staff and students to effectively use digital technologies for teaching, learning, research and engagement. This section reviews the strengths and limitations of several policies in Hungary, including those related to investments in, and management of, digital infrastructure and data systems and policies that regulate the purchase and use of digital technologies in higher education.

Digital infrastructure and data systems investments and management

The Hungarian government has made useful investments in the ICT infrastructure that supports the digitalisation of Hungary's economy and society, in particular through expanding broadband Wi-Fi access and developing a national high-performance computer network (Digital Success Programme, 2016^[1]; DSN/DHECC, 2020^[5]). This backbone network infrastructure (the HBONE+ system) provides the basic infrastructure to support the digitalisation of higher education in Hungary.

Hungary has set up the Governmental Agency for Information Technology Development (KIFÜ), replacing the National Information Infrastructure Development Institute (NIIFI). KIFÜ's mandate is to implement and ensure the quality of national and EU co-funded ICT projects, develop and operate information technology infrastructure, including high-speed Internet, and provide services related to the use of this infrastructure to educational institutions at all levels, research organisations and public organisations such as libraries (Digital Success Programme, 2016^[1]; DSN/DHECC, 2020^[5]; KIFÜ, 2021^[18]).

However, according to higher education stakeholders interviewed by the OECD, KIFÜ plays a larger role at the school level than at the higher education level, where support is often ad hoc and project-based, despite significant needs with respect to digital infrastructure renewal and upgrading, and a lack of ICT professionals in HEIs to conduct digital infrastructure development work. Those interviewed by the OECD reported limited resources dedicated to digital infrastructure in the higher education sector and a limited ability to mobilise private actors to provide support for digital infrastructure. In addition, higher education stakeholders participating in OECD interviews did not identify KIFÜ (or NIIFI) or any other national-level body as a source of relevant support on digital infrastructure. Furthermore, despite vast knowledge and experience with the infrastructure and services available to HEIs and involvement in large-scale (including EU-level) infrastructure projects and networks, the agency has had a limited role in shaping higher education policy related to the digital transformation, in informing decision making, and in contributing to long-term planning of digital infrastructure.

Besides establishing systems and structures to provide basic digital infrastructure, the Hungarian government has recently stepped up support to increase student access to digital devices, which has become a necessity in the context of the pandemic. In particular, the government issued an interest-free Student Loan Plus in 2020, which can be used for purchasing electronic devices for up to HUF 500 000. However, only a small share of students responding to the OECD survey (approximately 5%) reported using this loan (Annex B).

With respect to data systems, Hungary has invested in an effective higher education information system (FIR), which underpins much of the government's management of the higher education system. That system also contains unit record data on higher education institution employees. The student data is linked at the unit record level to other administrative data sources, building a longitudinal picture of students' progress through higher education and into the labour market (DSN/DHECC, 2020^[5]), offering a rich source of system management information. However, the system does not currently offer information on the digitalisation of higher education.

Technology purchase and use

Government authorities not only invest in digital infrastructure but also play an important role in regulating the systems and tools used by HEIs, teachers and students. As discussed in the previous chapter, the government requires all public HEIs to use the same student information management system (NEPTUN) and requires that private institutions' systems be interoperable with that system. This facilitates the feeding of core student information into the FIR system. In addition, when combined with data from learning management systems (LMS) or virtual learning environments (VLE), if used by all students and staff, this student information data can form the basis for powerful learning analytics and interventions to support student success (DSN/DHECC, 2020^[5]). However, there is room for improvement in the strategic use of these systems and the data they generate.

Public authorities are also responsible⁸ for the procurement of ICT equipment across the system (MIT, 2016^[2]; DSN/DHECC, 2020^[5]). Equipment is procured at a national scale and is standardised along technological, economic and quality indicators, and is given a fixed price. Contracts are put in place with suppliers with a medium-term horizon to ensure stability and predictability. Centralised procurement is one way to ensure that HEIs' systems are interoperable and exploit market power.

However, the policy of centralised procurement of information technology (IT) equipment – and the four-year halt on procurement (MIT, 2016^[2]) – has led to delays in procurement, a point made in the DES action plan (which proposed an easing of centralised procurement). Furthermore, the centralised processes cannot respond to local and institutional needs and have created a barrier to progress (DSN/DHECC, 2020^[5]). This is especially the case with small and/or specialised purchases, which need to go through the same centralised process, but may be too small to be given high priority in a national allocation system.

Stakeholder interviews conducted by the OECD revealed a tension between the simplicity of centralised procurement and the inflexibility that the centralised system produces. Interviewees expressed concerns about the delays resulting from centralisation and the lack of flexibility (especially in the procurement of specialised equipment with a small number of users). On the other hand, they also expressed concern at the risk of the proliferation of multiple types of devices that may not be interoperable with institutional standards (see Annex A).

While some areas of digital infrastructure are strongly regulated, others may need greater government guidance. For example, while many students use their own digital devices for learning, there is a need for HEIs to enable “Bring Your Own Device” (BYOD) access to their networks, including legal access to commonly used software (Digital Success Programme, 2016^[1]; DSN/DHECC, 2020^[5]). However, no policies are currently in place that target this area.

Another area where government regulation is particularly relevant is data protection (further discussed in Chapter 4). Interviews of institutional stakeholders revealed emerging concerns regarding the safe and effective use of increasingly granular data, such as that provided by LMS and VLE, and concerns regarding intellectual property rights' protection limiting the take-up of certain practices, such as sharing educational content or using open data repositories.

Proposed policy recommendations

The Hungarian government has taken steps to support the development of digital infrastructure supporting effective teaching and learning. However, opportunities exist in several areas to support better and more flexible access to adequate technologies and to set a regulatory framework that provides standards of operability and data protection that can improve both the ease of use of digital technologies and the trust of users – students and staff – in these technologies.

Below are three areas for analysis and possible policy development that the Hungarian government, in close collaboration with Hungarian HEIs, should consider adopting as matters of high priority as they work to advance digitalisation in the higher education system.

Reconsider the balance between central control and autonomy in IT acquisition

One of the persistent messages that arose from the OECD's investigation of digitalisation in Hungarian higher education was that the centralised procurement process for ICT equipment and systems had many advantages (especially interoperability) but that it led to rigidity and procurement delays. This is particularly problematic in cases where there is a need for relatively small purchases (such as the systems needed for research programmes), which then have to take their place in a prioritisation exercise that includes large-scale, mission-critical systems. International experience suggests that it can be just as (or more) effective to define standards for systems (including interoperability) and then to allow institutions the autonomy to purchase their own equipment. Such an approach is more likely to enable timely replacement of infrastructure (Annexes A and C).

In the **United Kingdom**, where HEIs have the autonomy to manage their own infrastructure purchases, the government and the trade association for providers of educational equipment – the British Educational Suppliers Association (BESA) – have launched a service that vets suppliers and their products. This approach can be used to ensure interoperability of systems and means that institutions can access expert advice on purchase options and exercise their right to buy with confidence and without the rigidity and delays caused by centralised purchasing (British Educational Suppliers Association, 2021^[19]).

Norway operates an infrastructure procurement policy that sees some services (for instance, payroll, access, identity management and student admissions) centralised and standardised. However, systems that need to be tailored to institutions' needs and processes (such as student data and LMS/VLE) are chosen by the institution (Norwegian Ministry of Education and Research, 2018^[20]).

SURF is a co-operative of higher education and research institutions in the **Netherlands** that promotes collaboration among HEIs to address their ICT and digital learning needs. Experts from member institutions help peers across the country to ensure that services offered by educational technology providers are responsive to their needs. SURF experts advise on such areas as learner analytics, digital educational resources and infrastructure (OECD, 2019^[21]; SURF, 2021^[22]).

A relevant policy recommendation related to reviewing the approach to procurement of ICT equipment is as follows.

Policy recommendation 5: Reconsider the centralised approach to ICT systems procurement and collaboratively develop with HEIs criteria to support well-informed digital infrastructure strategies and investments

Government should identify an existing entity with sufficient financial capacity and expertise or fund the creation of a group of experts, from relevant government ministries and agencies, HEIs and the ICT sector, to:

- Recommend decision-making criteria for deciding which systems (if any) should remain subject to centralised purchase arrangements, taking into account cost considerations, issues of scale, the level of customisation and specialisation required, as well as interoperability and standardisation considerations. The group of experts should consult on the draft criteria with institutions and other experts in Hungary and other countries with relevant experience, recommend the resulting criteria for adoption by the government and set up a regular review process to ensure criteria remain current.
- Provide advice on how best to manage system procurement under a more devolved approach while retaining the principle of interoperability of any devolved-purchase system with government

systems and with core institutional systems. This would require identifying a set of standards that digital systems would have to meet and investigating the system standards applied in other jurisdictions (such as in the United Kingdom). The expert group should draft standards for systems to be purchased by Hungarian HEIs; invite Hungarian suppliers to comment on the standards and the match of products currently in use in Hungarian HEIs to those standards; conduct a peer review of the standards with experts in and outside of Hungary; and recommend the draft standards for adoption by the government.

- Provide advice on scenarios for the ten-year costs and potential savings of enhancing the ICT infrastructure of the higher education system and potential options for reallocation of that budget between government and HEIs.

Ensure access to high-quality digital devices and support services to use devices

One of the most pressing issues facing a higher education system as it moves to a digitalised environment is ensuring equity of access to networks, hardware and software, and information to all students and staff. The quality and ease of use of the digital technologies accessible, as well as the availability of support services, are also critical to support the widespread adoption of digital practices.

A relevant policy recommendation related to ensuring access to high-quality digital devices and support services to use devices is as follows.

Policy direction 6: Consider targeted funding to expand access to hardware and software and increase the capacity of HEIs to provide support to students and staff

- Invite the group of experts (see Policy recommendation 5) to recommend a compulsory, common minimum standard for students' and teachers' own devices for use on HEI ICT networks. Such a standard should also consider the requirement for all HEIs to establish support services that help students and teachers navigate institutional ICT networks and systems.
- Work with HEIs to identify investments needed to ensure that their ICT networks allow for bring-your-own-device (BYOD) access and that they have sufficient support services available to all students and staff, consistent with a common minimum standard.
- Given the Hungarian government's ambitious equity of access goals (MIT, 2016^[2]), consider the extension of the interest-free loan scheme for the purchase of IT equipment, established in May 2020 for a longer period, or alternative financing schemes, such as a targeted lease scheme or subsidised purchase scheme to provide students and teachers who are unable to use their own device with the exclusive use of a device throughout their studies or work at a given institution.

Set data policies and standards

The government has taken important steps in creating higher education data systems (FIR), the student stipends system (HÖSZ) and the graduate tracking system. However, there is scope for improvement in the use of these data systems to understand the extent and depth of digital practices in higher education, the performance of digital education versus in-person education, and to support the improvement of teaching and learning, for instance, through the use of learning analytics (discussed in the next section).

As the use of data expands rapidly in digital learning environments, standards must be set to ensure the integrity and protection of learner data. Data integrity is a growing concern in areas such as digital assessment and credentialing, for instance. At the same time, data protection and use are increasingly important as more individual-level data is collected on individuals and their behaviours through LMS/VLE systems.

This places an obligation on the government, as manager of the system, to ensure that the data is managed well and that the data standards used in those systems are appropriate – including data definitions and

formats, standards for the housing of data, publication policies and data protection standards. It is also vital to ensure that those standards are applied uniformly by HEIs.

A relevant policy recommendation related to setting data policies and standards is as follows.

Policy recommendation 7: Create data policies and standards

- Invite the group of experts (see Policy recommendation 5) to assess existing government and institutional ICT and data policies and standards; compare Hungarian approaches with the standards, policies and practices in digitally advanced EU jurisdictions; draft and/or propose amendments to policies and standards as appropriate; consult with institutions and other national and international experts, including from the IT sector, on the draft proposals and then recommend them for adoption by government and institutions; and set up a regular review process to ensure policies and standards remain current.
 - Consultation with international experts could involve, for instance, the expert group on “ethical guidelines on artificial intelligence and data usage in education and training” that will be set up by the end of 2021 as part of the European Commission’s Digital Education Action Plan 2021-27 (European Commission, 2021^[23]).
- Areas of investigation should include, in particular:
 - policies regarding the integrity of data in a digital learning environment
 - standards for personal data protection and use
 - standards for the sharing and use of educational and scientific content
 - data publication standards
 - standards for BYOD access.

3.4. Developing the processes: Teaching, research and engagement

Current state

The processes of teaching, learning, research and engagement form the core of higher education activities and are largely within the remit of autonomous HEIs. However, these processes are also shaped by public policies and incentives that support and motivate higher education stakeholders – especially staff – to change pedagogical practices. This section reviews how public authorities have worked to support new processes of teaching and learning adapted to a digital environment in two areas – strategic policies and targeted projects – and discusses the strengths and limitations of these initiatives. It also briefly discusses efforts at the institutional level to support a greater focus on digital teaching and learning.

Government strategies

The Hungarian government has prioritised modernising higher education teaching and learning in an online environment in both the DES and Shifting of Gears strategy. It noted the need for “the pedagogical and teaching methodology knowledge of instructors...” to increase significantly and that “educational methodology and technology must be modernised”. In addition, government strategies recognise the importance of aligning the policies that shape institutional and teacher behaviour to meet the needs of digital teaching and learning (Digital Success Programme, 2016^[1]; MIT, 2016^[2]).

The strategies also highlight areas where improvements have occurred and that provide a basis to build on, including the stronger focus on teaching transversal skills – including digital skills – and significant activity in developing materials for online learning and pedagogy (MIT, 2016^[2]; MIT, 2021^[8]).

However, some of the policies and systems that motivate the behaviour of institutions and individual academics may hinder the adoption of effective adoption of digitalisation in Hungary. As discussed in the first section on the policy framework, despite a change in the funding system that recognises and caters for part-time enrolments,⁹ rigidities remain regarding the system of credit and quality assurance rules that hinder the flexibility needed to help online study flourish (DSN/DHECC, 2020^[5]).

With respect to the employment and upskilling of academic staff, promotion is based principally on seniority and research performance, with little account taken of teaching performance. As a result, there is little availability (and therefore low take-up) of professional development, and academic staff cannot be obliged to engage in professional development (Annex A) (DSN/DHECC, 2020^[5]). The government states that the higher education workforce requires upskilling but that “... the indicators for [Hungary] ...in this area are very negative” (MIT, 2016^[2]).

Projects supporting teaching and learning

In addition to broad strategies, projects have been initiated as part of the Shifting of Gears strategy and action plan that indicate a move towards digitalisation in the research and innovation work of higher education in Hungary (MIT, 2021^[8]). Research journals and databases form part of the centralised digital higher education resources collection. The government requires all academic research publications to be deposited in the Online Library of Hungarian Academic Works, which is then linked to the Elsevier Scopus database. This gives greater visibility to the research output of the system. Institutions also take action to expand their access to digital resources. For instance, as a member of the European Digital UniverCity (EDUC) alliance, the University of Pecs can draw on the rich digital research resources of that alliance (DSN/DHECC, 2020^[5]).

In addition, Hungary takes part in international peer-learning exercises to promote pedagogical innovation in higher education. Hungary participates, for instance, in the European Union’s PROFFORMANCE project, which creates opportunities to assess, benchmark and profile the performance of higher education teachers (DSN/DHECC, 2020^[5]).

Despite these initiatives that support improvements in digital teaching and learning, important opportunities have not yet been exploited, particularly making analytical use of data generated by digital technologies. For example, while institutions do have LMS/VLEs, and while teachers and students reported in the OECD survey that LMS access was typically sufficient or good (Annex B), it appears that little use is made of learning analytics, which could boost the quality of learning and improve student success (Annex C) (Guiney, 2016^[24]; Cardoso, Costa and Santos, 2017^[25]; Georgia State University, 2018^[26]). At the national level, there are detailed datasets – the Higher Education Information System, the Database on Student Stipends and the Graduate Tracking System – that enable an analysis of, and research into, the performance of institutions and the system. However, it appears that the potential of these systems has not been fully exploited for that purpose (DSN/DHECC, 2020^[5]).

Increasing the frequency with which institutions develop strategies

In Hungary, higher education leaders who responded to the OECD stakeholder consultation survey reported that institutional structures dedicated to digitalisation are becoming more prevalent, with about 20% of the leader respondents noting their institution had such structure before the pandemic, and more than 30% reporting such structure having been put in place in the wake of the pandemic (Annex B). Despite progress, stakeholders interviewed by the OECD reported that many HEIs continue to lack dedicated structures equipped to provide technological and pedagogical support and that the use of such structures is uneven – with more take-up of services in settings where there is longer and deeper institutional experience with digital teaching and learning. Even where those structures exist, in the context of the growing adoption of online teaching, it is unclear they would have sufficient capacity to keep pace with increased digitalisation in higher education.

Proposed policy recommendations

Building the infrastructure, data systems, standards and policies that enable digitally enhanced teaching and learning is a critical step towards the digitalisation of higher education. However, to capitalise on that investment, Hungarian authorities can support HEIs in their work to ensure that they have the processes – and especially, the teaching and learning processes – that can take advantage of those systems and standards. Teaching in an online environment has – or should have – a different pedagogy from traditional teaching. This requires institutions to help teachers and students adapt to this new environment. While this responsibility lies primarily with HEIs, the government can play a role in providing support and incentives and in removing barriers that exist in the legal and policy framework.

Below are three areas for analysis and possible policy development that the Hungarian government, in close collaboration with Hungarian HEIs, should consider adopting as matters of high priority as they work to advance digitalisation in the higher education system.

Improve support to help academic staff engage in digital teaching

The pandemic has induced a sudden shift to digital teaching and learning, which students and staff have mostly accepted as a necessity in the emergency context. If it is to become a sustainable mode of teaching and learning, generating good learning outcomes and the satisfaction of both students and staff, it requires re-thinking how teaching and learning are done in higher education. As noted in Chapter 2, countries where higher education teaching is characterised by student-centred pedagogies rather than traditional frontal teaching tend to show higher rates of engagement in online learning. Governments in these countries often fund dedicated structures to experiment with, and scale, student-centred, digitally enhanced pedagogies in higher education.

Some OECD countries have made strides to support the expansion of online teaching and pedagogical innovation, having begun these efforts before the pandemic. For example, **Ireland's** National Forum for the Enhancement of Teaching and Learning in Higher Education is an entity funded by the country's Higher Education Authority to lead and advise on enhancing teaching and learning in Irish higher education. The National Forum co-ordinated the design and implementation of the INDEX survey and works with the Higher Education Authority on other projects supporting pedagogy on line. In addition, it offers professional development opportunities to teachers and funds initiatives that aim to support teaching and learning enhancement. It also encourages teachers and HEIs to exchange information on teaching. During the pandemic, online teaching resources have been shared through its network (National Forum for the Enhancement of Teaching and Learning in Higher Education, 2021^[27]).

In **Wales (United Kingdom)**, the government began in 2012 to provide free, centralised and universal access to classroom-focused tools and resources for all teachers and learners in the country. This platform, Hwb, encompasses over 2 800 educational resources from a wide range of providers (museums, media entities, non-governmental organisations), which are accessible for use inside and outside of class by school-level students. A pilot for a higher education equivalent is now underway (Welsh Government, 2021^[28]).

At the institutional level, the KTH Royal Institute of Technology in **Sweden** introduced the Faculty Pedagogical Developer Initiative. Central to the project was the creation of the role of “pedagogical developer”. Twenty-four faculty developers – academics recognised for the excellence of their teaching – were appointed. Pedagogical developers facilitate co-operation and knowledge exchange between faculty members. Participation in the initiative is now integrated into KTH's faculty professional development programme (Berglund et al., 2017^[29]; Viberg and Mavroudi, 2019^[30]).

A relevant policy recommendation related to improving support to help academic staff engage in digital teaching is as follows.

Policy recommendation 8: Strengthen support for higher education staff to expand the adoption of digitally enhanced, student-centred pedagogies

- Work with HEIs to investigate the prevalence and effectiveness of structures in HEIs that are dedicated to digitalisation, at the strategic governance level (e.g. digitalisation office/officer in the institutional leadership team) and at the operational level (e.g. teaching and learning office with a focus on supporting digital teaching and learning serving staff and students). This work should include consultation with the professional staff working in those structures, higher education leaders, academic staff and students.
- Consider targeted funding – matched by local institutional resources – to strengthen these structures' human and financial resources where necessary to increase their reach and impact.
- Consider strengthening the reach and visibility of a national body to conduct research and innovation in student-centred pedagogies, with a focus on digital technologies. Such body should be structured in a way that makes it highly responsive to the needs and priorities of HEIs, considering for instance the approach taken by the Irish National Forum for the Enhancement of Teaching and Learning in Higher Education, which academically-led board provides strategic guidance, oversight and leadership (National Forum for the Enhancement of Teaching and Learning in Higher Education, 2021^[27]). This body would, in particular, foster collaboration among Hungarian institutions, so that HEIs with the most experience can share good practices – and the conditions for their implementation and scaling – with other HEIs. Such a body could also play a key role in collecting good practices from other countries and fostering professional networks (for example, of teaching and learning centre professionals) to ensure Hungarian higher education staff have easy access to international good practices.

Strengthen the incentives for academic staff to engage in digital teaching

Policy recommendation 2 proposed assessing a range of Hungary's existing higher education policies to provide a basis for a move to digital education and to identify and eliminate obstacles to the take-up of online teaching and learning. This included a suggestion to work with HEIs to adjust the criteria for assessing teacher performance in order to respond to the need for teachers to master online teaching. It also included a discussion of employment conditions (including salary arrangements and approaches to supporting staff) for higher education teachers so as to allow and encourage them to take on professional development that provides the skills needed for delivering and assessing online learning. These proposals address only some of the reported difficulties experienced by higher education teachers in adapting to a digital environment, as stakeholders reported that the problems with the academic profession in Hungary run deeper.

Some OECD countries have tried to improve the standing of higher education teachers and the prestige of the higher education teaching profession, for example, to increase teacher motivation to engage in pedagogical innovation.

At institutional level, such schemes operate, for instance, at the University of Edinburgh, in **Scotland (United Kingdom)** and the University of Canterbury, in **New Zealand**, where academics with a record of excellence in teaching and learning are given additional time to engage in the scholarship of teaching and learning and to share their practice with colleagues (University of Edinburgh, 2017^[31]; University of Canterbury, 2021^[32]).

Also, in the **United Kingdom**, higher education teachers can apply for membership to the prestigious Higher Education Academy by presenting a portfolio that demonstrates their skills and capabilities as teachers (Advance HE, 2021^[33]). In 2001, the **New Zealand** government established annual tertiary teaching excellence awards, with the leading awardee each year receiving the Prime Minister's Supreme Award for Tertiary Teaching Excellence. All those who receive awards are granted membership to an academy comprised of an elite group of excellent teachers who provide expertise and advice to the

government and their colleagues. These awards gain considerable media coverage and have lent status to the teaching component of academics' roles (Ako Aotearoa, 2021^[34]). Similarly, in 2017, the **Netherlands** started the Comenius Fellowship scheme, which awards competitive grants to teachers and HEIs stimulating innovation in teaching (Dutch Ministry of Education Culture and Science, 2015^[35]).

A relevant policy recommendation related to strengthening the incentives for academic staff to engage in digital teaching is as follows.

Policy recommendation 9: Revise the employment framework for Hungarian higher education staff to reward quality digital teaching and identify and disseminate examples of excellent teaching

- Convene a panel of innovative teachers from Hungary and other leading countries to identify criteria for assessing teacher performance in a digital teaching and learning environment.
- Encourage the rectors of Hungary's HEIs to investigate opportunities to identify and highlight examples of excellent teaching – including excellent and innovative online teaching – and explore mechanisms for disseminating those examples across teaching staff. This could include:
 - identifying options for raising the profile and prestige of higher education teaching, such as an excellence and innovation awards system that honours excellent teachers and/or the creation of an academy of excellence (or similar grouping) hosted by the Rectors' Conference, that would provide the opportunity for awardees to promote their practice among their peers.
 - encouraging institutions to identify and honour excellent and innovative teachers among their own staff and to identify mechanisms to share their practice among their peers.
- While outside the scope of this project, the unattractive conditions of the academic profession in Hungary may hinder the development of the academic workforce and the take-up of pedagogical innovation and digital technologies among staff. Employment conditions should be reviewed to understand concerns about low remuneration levels (and claims of problematic incentives arising from low remuneration), high workloads, teachers' limited interactions with students, intellectual property protection and other matters. Depending on the results of that review, consideration could be given to developing a plan to improve the employment arrangements of academics.

Explore the potential of data to help institutions improve student success in Hungarian higher education

Hungary has extensive and well-linked data systems on higher education. Moreover, most of its institutions use LMS or VLE. However, these data resources have not been widely used to improve the experience and the success of students.

At the Lisbon University Institute (Instituto Universitário de Lisboa, ISCTE-IUL), a public university in **Portugal**, learning analytics have been used since 2016 to create a learning scorecard dashboard to monitor course performance. The dashboard draws data from the LMS and students' academic records. Students' behaviour within the LMS is monitored on several dimensions, including student engagement, responsibility and collaboration. Students can use the dashboard to assess their performance while teachers have granular feedback on class performance (Cardoso, Costa and Santos, 2017^[25]).

At Georgia State University in the **United States**, predictive analytics have been used since 2012 to follow student performance. Over 40 000 students are assessed for a wide range of risk factors every day, including if they have learning issues critical for future coursework that need to be addressed to minimise the risk of failure. Early intervention is a priority – alerts are sent to both students and faculty when risks are identified, and one-on-one meetings are scheduled to help the student improve. In other words, predictive analytics lead to prescriptive actions designed to reduce the risk of failure. The results demonstrate both a decrease of more than a semester in average time to degree and an improvement in attainment for disadvantaged students (Georgia State University, 2018^[26]; Georgia State University, 2021^[36]).

Bailey et al. (2018^[37]) present six case studies from the **United States**¹⁰ where institutions have used a shift to online learning to gather information drawn from their own administrative systems, their online learning records and their LMS, to improve student success.

A relevant policy recommendation related to exploring the potential of data to help institutions improve student success in Hungarian higher education is as follows.

Policy recommendation 10: Explore the potential of using learner analytics to lift learner success

- Encourage HEIs to ensure that there is high (if not universal) take-up and use of LMS/VLEs by their academic staff in order to broaden the base of learner data in the system, creating a robust platform for the introduction of learner analytics.
- Promote peer learning by inviting successful international practitioners of learner analytics to come to Hungary to demonstrate their systems and approaches to implementation.¹¹ Also, encourage institutions to identify staff interested in developing learner analytics to engage with practitioners and visit institutions abroad that have implemented learner analytics successfully.
- Encourage HEIs to identify staff who might be seen as champions for learner analytics and who can help advance its take-up across the system.

3.5. Delivering benefits to users: Students, graduates and employers

Current state

To be effective, digitalisation strategies of government and HEIs need to deliver results to students, graduates, and to employers who hire those graduates. This section places special emphasis on student access to digital technologies, their experience with digital learning and their digital skills, highlighting both strengths and weaknesses in these areas.

Access to technologies and digital skills

The OECD survey conducted for this project confirms the extent of the shift to online learning in the face of the COVID-19 pandemic, as close to all respondents reported that their work had migrated on line (see Annex B). There are good institutional-level examples of responses to the pandemic that forced academics to adopt online learning with little notice or preparation time. Some of those cases were initiated pre-COVID but provided examples of what is possible (DSN/DHECC, 2020^[5]).

Hungarian students, by and large, enter universities with expectations of flexible, engaging delivery of teaching (Annex A). Most current entrants to higher education also have their own digital devices, with 93% reporting that they have access to an adequate (or better) computer (Annex B); the Digital Education Strategy states that “almost 100% of students entering higher education have the appropriate digital equipment (laptop, smartphone, desktop computer).” Furthermore, the great majority of students responding to the OECD survey (90%) stated that they had adequate Internet access. In addition, most (90%) had a mobile device (Annex B). Further, there is a significant body of knowledge resources available on line – including the Online Library of Hungarian Academic Works, which is integrated with the global publications database Scopus (DSN/DHECC, 2020^[5]). These are important tools needed for digital education and research.

However, students in many institutions cannot connect to the institutional IT network and therefore do not have legal access to software packages (Digital Success Programme, 2016^[1]; DSN/DHECC, 2020^[5]). In addition, a lack of standardisation of software within institutions means that students need to change software depending on which activity or course they are engaging with (Annex A).

The digital skills of students entering higher education are an important factor shaping their ability to use digital technologies effectively. Students' widespread access to digital devices and adequate Internet connection, plus the fact that the use of ICT equipment at schools in Hungary is above the median for OECD countries (OECD, 2019^[38]), imply that many students enter higher education with reasonable basic digital skills (DSN/DHECC, 2020^[5]).

However, the participation rate in Hungarian higher education is relatively low, compared with other OECD countries (OECD, 2020^[39]), especially among disadvantaged groups such as Roma, those with disabilities, and those who are disadvantaged as a result of regional factors (MIT, 2016^[2]; DSN/DHECC, 2020^[5]; MIT, 2021^[8]). In addition to facing barriers due to poorer school achievement and socio-economic challenges, students from under-represented groups in higher education may not have access to digital devices or suitable broadband at home (Annex A) and may have lower exposure to digital devices than other higher education entrants. Therefore, as Hungary expands higher education access, the share of entrants with adequate access to devices and digital skills may decrease.

Student learning experience

The student experience in an online environment is shaped in large part by pedagogical approaches that are prevalent in the country: both national and international analysis suggests that there is a need to modernise pedagogical practices and enhance the labour market relevance of higher education teaching in Hungary, regardless of the delivery mode (MIT, 2016^[2]; OECD, 2021^[40]).

Students interviewed by the OECD reported mixed experiences with online teaching (Annex A). While they recognised the success of their HEIs and teachers to switch rapidly to online teaching, some expressed concerns about the difficulty of staying engaged in the online environment. The OECD survey confirms these views: the majority of students who responded to the OECD survey found online learning more convenient than in person (more than 60%), but a large share (45%) noted that it was less interesting than in person (Annex B), raising questions about whether their teachers were using digital tools as well as they might. Furthermore, as discussed previously, the unexploited potential of learning analytics suggest that more could be done to support student success and limit the risk of higher dropout rates in an online environment, mentioned by many stakeholders interviewed by the OECD (Annex A).

There was also minimal discussion through OECD interviews of the new learning opportunities that digital technologies provide. These include, for instance, the development of micro-credentials, which are short, modular learning units that can help learners gain new skills to improve their labour market opportunities or help them advance in their educational pathways. Digital technologies, in particular, facilitate the delivery, and take-up, of such credentials, with a large share of micro-credentials focusing on skills in demand in the labour market, such as digital skills (Kato, Galán-Muros and Weko, 2020^[41]). However, the limited discussion of these topics may suggest these are yet to emerge as a tangible opportunity provided by digital learning in Hungary.

Proposed policy recommendations

Several policy recommendations provided in this report support the delivery of good outcomes for learners, graduates and employers. This includes Policy recommendations 5 and 6, which aim to enhance the capacity of institutions to make strategic decisions regarding digital infrastructure and effectively acquire the digital tools needed to support digital teaching and learning. Policy recommendation 10 proposes that Hungarian HEIs explore the potential of using learning analytics to improve learner success. Finally, Policy recommendations 2, 8 and 9 aim to ensure that the higher education policy framework facilitates the expansion of digitally enhanced teaching and learning and the support and incentives for higher education teachers to engage in innovative, student-centred pedagogies in a digital environment.

In addition, one of the crucial challenges facing the Hungarian system is to improve access to, and participation and success in, higher education. While those issues are broader than the question of digitalisation, they cannot be wholly separated. Unless accompanied by adequate support, further digitalisation is likely to exacerbate existing disparities in access and success in higher education; and those from disadvantaged groups are more likely to lack good access to digital devices, resources and skills that will be increasingly needed to succeed as the higher education system becomes more digitally enabled.

Below are two areas for analysis and possible policy development that the Hungarian government, in close collaboration with Hungarian HEIs, should consider adopting as matters of high priority as they work to advance digitalisation in the higher education system.

Use data to conduct analysis on equity of access and success in digital higher education

Given the rich national education datasets that Hungary has, the issue of accessibility can and should be explored to identify the source of disparities. For instance, it is useful to further explore how disparity of access is affected by regional factors, socio-economic factors and school achievement factors and whether disparities in school achievement are exacerbated by ICT availability, access and use. Further to such analysis, Hungary could explore how to use digital technologies and learning analytics to support the students who enrol in higher education but may be at risk of dropping out, especially in a digital environment.

In addition, there is scope for Hungary to leverage the opportunities of digital technologies to enhance learning opportunities for all learners. This is increasingly relevant in a digitalised economy where labour market needs – and skills needs – change rapidly and require workers to regularly update their skills. In some OECD jurisdictions, for instance, **Finland** or **Ontario (Canada)**, online one-stop campuses have been created to facilitate access of learners of all ages to recognised, credit-bearing learning opportunities (see Annex C).

Two further areas of work for consideration by the Hungarian authorities that focus on equity of access and success in digital higher education are as follows.

Policy recommendation 11: Engage in analysis and research into problems of access to higher education among some groups and develop interventions to enhance equity of access

- Develop a plan for analysis of the country's national education and other data to identify groups with poor access to higher education and ICT resources (such as digital devices and fast broadband).
- Develop school-level interventions aimed at lifting the aspirations of those groups, providing them with learning and other supports, raising their school achievement and helping them move into higher education with adequate skill levels and learning support, and therefore, with a reasonable chance of success.
- Develop higher education level interventions making use of digital technologies and learning analytics to provide students with behavioural incentives to engage with digital teaching and learning.

It was also proposed in Policy recommendation 4 that the government design a plan to collect data on students' take-up of and achievement in online learning. The following policy direction sets out a longer-term objective, once effective data collection and analysis systems are in place.

Policy recommendation 12: Analyse patterns of students' take-up of and achievement in online learning

- Once data on digitally enhanced teaching and learning are collected (see Policy recommendation 4), analyse the data to identify patterns of take-up by:

- type of institution (for example, identify institutions or types or regions of institutions that are less inclined to offer online learning)
- type of programme (for example, level, field of study, full-time/part-time)
- type of student (for instance, demographic and other background characteristics).
- Conduct the same type of analysis to determine how success in online learning compares with traditional in-person delivery.
- Complement those analyses with survey data and other data on what parts of the delivery cycle (theory, practical and fieldwork, assessments, etc.) are being digitalised.
- Monitor trends over time to assess how well online learning is being implemented across the higher education system.

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Notes

1. See Section 26 of Act CCIV of 2011 (Higher Education Act).
2. See Government Decree No. 87/2015 of 9 April 2015 on the implementation of certain provisions of Act CCIV of 2011 on national higher education.
3. See Government Decree No. 395/2015 of 12 December 2015 on implementing Act XXXIII of 1992 on the legal status of public service employees.
4. These are defined in Government Decree 139/2015 of 9 June 2015.
5. This could be arranged through the international exchange schemes run by the [Tempus Foundation](#).
6. Similar to the US National Center for Education Statistics data collection approach, courses in New Zealand are assigned to one of four groups according to the extent of use of online approaches – from wholly online, two levels of partial online and wholly in person (New Zealand Ministry of Education and Tertiary Education Commission, 2020^[43]).
7. In an Australian study, Bailey et al. (2015^[42]) found that a specific mode of study provided may benefit one student but hinder another.
8. Under Government Decree No. 168/2004 (V.25) and the 2015 CXLIII. Law on Public Procurement.
9. Under Government Decree No. 89/2016 (XII. 2.) on the financing of the core activities of HEIs.
10. Rio Salado College, Arizona State University, Houston Community College, Kentucky Community and Technical College System and University of Central Florida, as well as Georgia State University.
11. This could be done, for instance, as part of academic exchange programmes supported by the [Tempus Foundation](#).



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