Digital higher education: Emerging quality standards, practices and supports

François Staring,

Mark Brown,

Paul Bacsich,

Dirk Ifenthaler

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Digital Higher Education: Emerging Quality Standards, Practices and Supports

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By François Staring (OECD), informed by expert contributions prepared by Professor Mark Brown (Dublin City University), Dr Paul Bacsich (DualVersity) and Dr Dirk Ifenthaler (University of Mannheim)

This working paper has been authorised by Andreas Schleicher, Director of the Directorate for Education and Skills, OECD.

François Staring (Francois.Staring@oecd.org)

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Abstract

Fully online and hybrid study programmes have emerged at a rapid rate across higher education. However, the negative experience of some students, instructors and institutions with emergency remote instruction during the COVID-19 pandemic has led to public concerns over the quality of digital study programmes. As a result, public authorities across the OECD have started to reflect on how to embed the quality assurance (QA) of digital education into their existing QA frameworks for higher education. This Working Paper aims to assist policy makers as they seek to adapt their higher education QA systems to digital education by:

- Reviewing the advice and guidance provided by international and regional quality assurance organisations;
- Analysing the standards and indicators for digital higher education developed by QA agencies;
- Identifying trends and best practice from higher education institutions for the quality management of digital study programmes; and
- Discussing how public authorities can support institutions to enhance their internal quality management policies and processes for digital teaching and learning.

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1 Introduction

This paper presents an analysis of how quality assurance (QA) agencies and higher education institutions (HEIs) across OECD member countries and the European Higher Education Area (EHEA) ensure the quality of digital higher education, and how public officials are supporting these efforts. In this paper, digital higher education is defined as covering three broad categories of digital provision: (fully) online, hybrid and blended education (see Box 1). While recognising that an increasing number of HEIs are developing micro-credentials, many of which are offered in fully online or hybrid study formats (OECD, 2021[1]), and higher education systems are reflecting on how to assure their quality, this paper focuses on the QA of digital courses and programmes leading to the award of an academic degree within the official three-cycle EHEA qualifications framework (EHEA, 2005[2]).

Box 1. Defining digital higher education

There are three main types of digital education depending on the timing and location of instruction[1]:

- ***Online education***. All instruction is delivered online, either synchronously, asynchronously or a combination of both. While instruction is delivered at a distance, learners may have the option to meet in person with peers or instructors, or to make use of on-campus facilities and learning materials. This is different from "distance education", which encompasses all forms of education where learner and instructor are physically separate (e.g. internet, radio, television and print-based instruction).

- ***Hybrid education***. Instruction is delivered both online and on-campus, with the online components taking place synchronously, asynchronously or a combination of both. The online components replace in-person instruction, meaning in-person instruction occurs less frequently.

- ***Blended education***. Instruction takes place fully in person and is blended with or enhanced by online materials and activities, such as a virtual learning environment (VLE)/learning management system (LMS), open educational resources (OER), simulations or gaming. In contrast to hybrid education, the online components "are not meant to 'replace' face-to-face class time; rather, they are meant to supplement and build upon the content discussed in the classroom" (Siegelman, 2019[3]).

Source: Adapted from Siegelman (2019[3]), "Blended, Hybrid, and Flipped Courses: What's the Difference?", *Center for the Advancement of Teaching*, Temple University, Philadelphia, https://teaching.temple.edu/edvice-exchange/2019/11/blended-hybrid-and-flipped-courses-what%E2%80%99s-difference

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[1] The **location** considers the amount of time spent learning online (remotely) versus in person; the **timing** refers to whether learning takes place synchronously (i.e., "learning in which learner(s) and instructor(s) are in the same place, at the same time, in order for learning to take place") and asynchronously (i.e., "different times and spaces particular to each learner […] instructors usually set up a learning path, which students engage with at their own pace") (Finol, 2020[270]).

The paper is structured as follows:

- Section 2 reviews the advice and guidance provided by international and regional quality organisations, reflecting their role in providing learning and guidance for national QA agencies;
- Section 3 focuses on the external QA of digital higher education. It looks at both the regulatory and quality enhancement roles of QA bodies and identifies eight common quality principles for digital higher education;
- Section 4 focuses on the institutional quality management of digital higher education. It discusses recent trends in how HEIs are supporting and managing the quality of their digital provision by reviewing their practices under the eight quality principles identified in Section 3 and provides associated quality indicators for each;
- Section 5 discusses four key areas of support for institutions: developing an institutional digitalisation and QA strategy; developing, maintaining and supporting the effective use of digital education infrastructure; staff professional development; and national performance monitoring and benchmarking; and
- Section 6 provides conclusions to the report.

2 Transnational guidance for the quality assurance of digital higher education

This section reviews the advice and guidance provided by international and regional quality assurance (QA) organisations, the International Network of Quality Assurance Agencies in Higher Education (INQAAHE) and the European Network for Quality Assurance Agencies (ENQA), reflecting their role in providing learning and guidance for national QA agencies, as well as other international bodies important to the field of education.

2.1 An integrated approach to the quality assurance of digital higher education

The practices of QA agencies and HEIs are influenced by transnational organisations that aim to advise, support and recognise national QA bodies. When defining QA standards and processes, QA agencies and HEIs often "follow a regional or international QA agency's framework" (Jung, 2022, p. 8[4]) to ensure comparability of study programmes and credentials, and to enhance the mobility of students and workers. Globally, this role is fulfilled by the International Network of Quality Assurance Agencies in Higher Education (INQAAHE). In Europe, the European Network for Quality Assurance Agencies in the European Higher Education Area (ENQA) seeks to promote the alignment of European QA agencies with the *European Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG)* (ENQA, 2015[5]). The work of QA bodies is also influenced by other international organisations active in promoting international collaboration in the field of (digital) education, such as the United Nations Educational, Scientific and Cultural Organisation (UNESCO), the European Commission, the OECD, the International Council for Open and Distance Education (ICDE), and the Asia-Pacific Organisation for Economic Cooperation (APEC).

These organisations have reflected on whether QA agencies and HEIs should develop separate or additional standards and processes to ensure the quality of digital higher education – different to those that apply to "traditional" delivery – and have concluded that an integrated approach is preferred. This means embedding specific "e-learning considerations" within the existing overarching QA framework. The advantage of adopting such an approach is that it allows the existing QA architecture and principles to be maintained, while making the existing standards and procedures more "multidimensional" and "multifunctional" (Ossiannilsson et al., 2015[6]).

INQAAHE, for example, states that its *Guidelines of Good Practice* (2018, p. 7[7]) are applicable to "different modes of provision, such as transnational education, distance or online programmes or other non-traditional approaches to HE". However, following a global trends analysis of higher education QA (2020[8]), INQAAHE recognises that the current version of the guidelines requires further revision to properly encompass digital provision. In the European context, the *European Standards and Guidelines for Quality Assurance in the European Higher Education Area* (ESG) (ENQA, 2015[5]) developed by **ENQA** state that the standards and guidelines apply to "all higher education offered in the EHEA regardless of

the mode of study or place of delivery" (ENQA, 2015[5]). However, an ENQA Working Group subsequently recommends that "external quality assurance considers the characteristics of e-learning in regular procedures" (Huertas et al., 2018a, p. 18[9]). The working group advises QA agencies to ensure that institutions make specific reference to e-learning in their self-assessment reports, that site visits take place at the location where most of the institution's technical infrastructure is located, that QA agencies include e-learning competence in the selection process of peer review experts, and that they provide training to experts prior to conducting institutional reviews.

Likewise, the **ICDE** proposes that the QA of digital education is embedded in existing processes "and not separate from the mainstream" (Tait, 2022, pp. 9-10[10]). A strong commitment to a single integrated approach also appears in **UNESCO's** *Global Convention on the Recognition of Qualifications Concerning Higher Education*, which states that qualifications "subject to comparable quality assurance mechanisms […] will be assessed […] using the same criteria as those applied to similar qualifications acquired through traditional learning modes" (UNESCO, 2021, p. 5[11]). **APEC**, following a consultation process with 13 member countries, also finds that "taking an approach toward the quality assurance of online education, which is integrated within existing frameworks, ensures that standards and quality are equivalent for all modes of learning" (APEC, 2017, p. 21[12]).

2.2 Rapid emergence but limited use of transnational frameworks for the quality assurance of digital higher education

Organisations and experts in higher education QA and digitalisation generally agree that an integrated approach to the external QA of digital higher education is advisable, however there are varying views about what constitutes quality in digital education. Researchers and practitioners from a wide range of private, non-profit, non-governmental and academic organisations active in the field of QA and (digital) education have been quick to develop frameworks for the (higher) education sector that contain specific quality standards and indicators for digital education. An overview of such frameworks can be found in publications by Esfijani (2018[13]), the ICDE (Ossiannilsson et al., 2015[6]) and the European University Association (EUA) (Volungevičienė et al., 2021[14]). An example of a recent quality framework is the *Benchmarking Framework for Online, Open, Smart, and Technology Enhanced Higher Education* (Hassan, 2022[15]), developed by the **ICDE**. Most of these frameworks, however, have remained largely unused by HEIs and QA bodies (Volungevičienė et al., 2021[14]).

International and regional networks of QA agencies have been slower to develop quality standards for digital higher education provision. In recent years, however, some have started to develop transnational frameworks to promote a common approach to the QA of digital higher education. In 2019, **UNESCO** developed a *Blended Learning Self-Assessment Tool* for the Asia-Pacific region (2019a[16]). The tool focuses on blended education, which is defined as "the deliberate combination of online learning with face-to-face classroom-based learning" (UNESCO, 2019a[16]), and aims to assist institutions in evaluating their approach to blended learning across eight dimensions.[2] In **Latin America**, the Ibero-American Network for Quality Assurance in Higher Education (RIACES) and the Organisation of Ibero-American States for Education, Science and Culture (OEI) have recently made an effort to develop common standards. In 2021, they launched a Virtual Quality Seal, *Kalos Virtual Ibéroamerica* (KVI) (Organisation of Ibero-American States for Education, 2021[17]). In **Europe**, the European Commission has developed the *DigCompOrg* and *DigCompEdu* frameworks, proposing key dimensions[3] common to all education

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[2] Vision and philosophy; Curriculum; Professional development; Learning support; Infrastructure; Facilities; Resources and support; Policy and institutional structure; Partnerships; and Research and evaluation.

[3] *DigCompOrg* covers 74 descriptors across seven thematic areas: Leadership and governance practices; Teaching and learning practices; Professional development; Assessment practices; Content and curricula; Collaboration and

institutions and educators (Kampylis et al., 2015[18]), (Redecker and Punie, 2020[19]). More recently, ENQA (Huertas et al., 2018a[9]) has developed a list of "elements to consider" and "indicators" for the development of specific quality standards for digital provision (see Box 2). While non-binding on ENQA members, it presents a framework to integrate online and hybrid delivery modes within the European QA architecture.

Box 2. Key indicators for the institutional review of digital provision

Part I of the ESG (2015[5]) includes a set of ten standards and guidelines that can be used by external QA agencies operating in the EHEA to guide their development of national standards for institutions' internal QA processes. Across these ten standards, the ENQA Working Group report (Huertas et al., 2018a[9]) provides 36 indicators:

- *ESG 1.1 Policies for quality assurance.* Seven indicators are outlined under this standard including the inclusion of e-learning in the institution's overall strategy and the involvement of remote learners in the internal QA system.

- *ESG 1.2 Design and approval of programmes.* This standard covers six indicators, including "the institution has a clear strategy for digital innovation… E-learning programmes are aligned with the institutional mission… [and] Curricula design reflects pedagogical practices and innovation" (Huertas et al., 2018a[9]). The report also recommends checking that the people involved in designing, developing and evaluating e-learning have the required academic and technical expertise, and that teaching staff are made aware of the challenges and opportunities of developing e-learning programmes. Finally, students are mentioned as key stakeholders to be consulted when developing e-learning curricula.

- *ESG 1.3 Student-centred learning, teaching and assessment.* Nine indicators are proposed for this standard. Under this standard, the report recommends that QA agencies check the chosen teaching and learning processes, learning materials and technical infrastructure meet the aim of achieving learning outcomes, allow for e-assessment, facilitate student learning and are regularly reviewed and updated. QA agencies are also advised to check if students are made aware of e-assessment processes and plagiarism rules, and advised on how to appropriately work with online materials and behave in online environments.

- *ESG 1.4 Student admission, progression, recognition and certification*. The three indicators proposed for this standard are: (1) (prospective) students are informed about the equipment, e-learning, digital skills and knowledge requirements; (2) they are informed about the workload and pedagogical model and (3) there is an institutional policy and procedure in place to recognise prior learning.

- *ESG 1.5 Teaching staff*. Eight indicators are included under this standard, including: "The teaching staff is trained and proficient in the use of learning technologies and e-assessment methods… The institution has developed procedures to identify the support requirements of the teaching staff… [and] Technological and pedagogical support services for teachers are adequate, accessible, and timely" (Huertas et al., 2018a[9]). The report also recommends that QA agencies assess whether institutions monitor student-staff ratio to keep teachers' workload manageable, as well as staff hiring and recruitment procedures.

- *ESG 1.6 Learning resources and student support*. Five indicators are outlined under this standard, including: "The VLE supports a variety of methods and tools … The technical

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networking; and Infrastructure. *DigCompEdu* covers 22 competencies across six areas: Professional engagement; Digital resources; Teaching and learning; Assessment; Empowering learners; and Facilitating learners' digital competence.

infrastructure ensures the accessibility of the e-learning programme by students with special educational needs … [or] The institution provides students with an adequate e-library and virtual labs" (Huertas et al., 2018a[9]).

- ***ESG 1.7 Information management***. The four indicators proposed under this standard recommend QA agencies to check whether institutions adequately collect and use data to evaluate the quality of e-learning programmes, including learning analytics to track students' performance in real time. The HEI should also have information management systems that include "relevant, updated, and reliable information concerning the institution and its programmes" and policies that consider "ethical norms and government policy with respect to data protection and the privacy of students" (Huertas et al., 2018a[9]).

- ***ESG 1.8 Public information***. This standard includes four indicators. They focus on making sure that institutions publish reliable, complete and up-to-date information on: (1) study programmes, (2) technical supports, (3) technical requirements to use the system and (4) completion rates, pass rates and dropout rates.

- ***ESG 1.9 Ongoing monitoring and periodic review of programmes***. The four indicators under this standard advise QA agencies to assess whether: e-learning programmes are regularly reviewed, updated and improved; pedagogical developments are aligned with institutional strategy; information and communication technology (ICT) and pedagogy developments are analysed and implemented; and the internal quality assurance system takes into account feedback from key stakeholders (especially students).

- ***ESG 1.10 Cyclical external quality assurance***. The report recommends including the assessment of e-learning in external QA procedures in the same way as for provision through other means. It recommends institutions contact their respective QA agencies regarding their e-learning provision and start a process of exchange of information and collaboration for the development of sector-wide accepted standards and processes for the QA of digital higher education.

Source: Huertas, et al. (2018a[9]), *Considerations for Quality Assurance of E-Learning Provision,* European Association for Quality Assurance in Higher Education, https://www.aqu.cat/elButlleti/butlleti91/articles2_en.html#.YGY_R5NKhTZ

3 External quality assurance of digital higher education

This section describes how quality assurance (QA) agencies across the OECD and EHEA endeavour to assure the quality of digital higher education. It begins by looking at the regulatory role of QA bodies, and then examines their quality enhancement role, focusing on training initiatives for QA staff, the collection and sharing of best practice, and the development of a common terminology for digital education. Eight common standards for the QA of digital higher education are identified based on an analysis of twelve international quality frameworks for digital higher education.

3.1 The purpose and focus of external quality assurance

Despite increasing advice on digital quality from international, regional and specialist digital organisations, national QA bodies continue to be responsible for establishing standards and considerations governing digital higher education among the institutions they accredit. As a result, the emphasis placed on QA for the purpose of accountability and QA for the purpose of improvement (or enhancement) differs between QA bodies (see Box 3) (ENQA, 2015[5]), (Uvalić-Trumbić, 2016[20]), (Williams, 2016[21]).

Box 3. Quality assurance and quality enhancement in higher education

Quality assurance for the purpose of accountability (QA): the aim of providing information to assure the public, beneficiaries or "clients" of higher education (students, employers, governments, civil society) of the quality of HEIs' activities or "the process of establishing stakeholder confidence that provision (input, process and outcomes) fulfils expectations and measures up to threshold minimum requirements" (Harvey, 2022[22]).

Quality enhancement (QE): the process of providing advice, recommendations and supports on how HEIs might improve what they are doing (OECD, 2018, p. 53[23]).

Source: Adapter from Harvey (2022[22]), Analytic Quality Glossary", *Quality Research International*, http://www.qualityresearchinternational.com/glossary/ and OECD (2018[23]), Rethinking Quality Assurance for Higher Education in Brazil, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264309050-en

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While most QA agencies will implement a mix of QA- and QE-oriented activities, in jurisdictions with a more "interventionist" approach to external QA, there is a tendency to focus more on QA-oriented or "regulatory" activities. In addition to ensuring compliance with national regulations at institutional and programme level, QA agencies in these systems sometimes play a role in evaluating applications for the appointment of (senior) academic staff. This is the case in the **Czech Republic**, **Hungary** and **Slovenia,** for example. In

such systems, there is often a greater emphasis on *ex ante* procedures that seek to ensure that institutions and programmes meet the minimum requirements set out in national regulation prior to operation.

In jurisdictions with a less "interventionist" approach, there tends be a greater focus on QE-oriented or "enabling" approaches to support institutions with the development of their own internal QA procedures. Some of these jurisdictions (e.g. the **United Kingdom**, **Australia** and **Norway**) have a system of institutional self-accreditation in place. These are systems in which "institutions that meet a high level of quality or specific criteria through the quality assurance processes are authorised to establish study programmes and self-accredit their courses" (OECD, 2020a, p. 85[24]). However, institutions and study programmes must still undergo a regular external review by the responsible QA agency to demonstrate that quality is being achieved.

As a result, there are differences between QA agencies in terms of how they have responded to the challenge of supporting institutions to enhance the quality of their digital provision. Table 1 provides an overview of the variety of QA- and QE-oriented activities. QA agencies in the OECD typically engage in, and compares the UK Quality Assurance Agency (QAA), the Hungarian Accreditation Committee (MAB) and the Estonian Quality Agency for Higher and Vocational Education (HAKA) in both domains.

Table 1. Comparison of quality assurance and quality enhancement activities for digital higher education: QAA (United Kingdom), MAB (Hungary) and HAKA (Estonia)

Activities	Description	QAA	MAB	HAKA
1. Quality assurance				
The agency carries out external evaluation of institutions and/or programmes to **assure the quality** of digital provision				
Institution	*Ex ante* evaluation of minimum operating requirements for institutions offering digital education	Yes	No	No
	Ex post evaluation of institutions offering digital education	Yes	No	Yes
Programme	*Ex ante* evaluation of minimum requirements for the launch of digital study programmes	No	Yes	No
	Ex post evaluation of the quality of digital study programmes	No	No	Yes
Individual	The agency plays a role in assessing the quality of the digital competencies of staff working in HEIs by evaluating, for example, applications for (senior) tenured academic posts	No	No	No
2. Quality enhancement				
The agency carries out activities to **build the capacity of HEIs** to improve the quality of their digital provision and internal quality management practices				
Guidelines	**System level**. The agency has developed guidelines and best practice explaining "why" and "how" national performance indicators for digital learning can be met (e.g. student completion rates, dropout rates, lifelong learning participation, digitalisation of study programmes)	No	No	No
	Institution level. The agency has developed guidelines and best practice explaining "why" and "how" institutions can meet quality standards for digital learning	Yes	No	Yes
	Programme level. The agency has developed guidelines and best practice explaining "why" and "how" to meet quality standards in digital programmes	Yes	No	Yes
	Learner level. The agency has developed guidelines and best practice explaining how to support learners in digital programmes	Yes	No	No
Institutional self-review	The agency encourages and supports institutions to carry out institutional self-reviews of their digital learning policies and practices (sometimes as part of regulatory external review procedures)	Yes	No	Yes

Activities	Description	QAA	MAB	HAKA
Thematic analysis	The agency engages in independent thematic analysis at national and/or international level to provide institutions with guidance and best practice on quality digital learning	Yes	No	Yes
Training and peer learning	The agency provides opportunities for HEIs to take part in (online) training and peer learning activities to strengthen their capacity around quality digital education	Yes	Yes	Yes
Good practice	The agency has repositories and resources for HEIs to access and share good practice on digital education	Yes	No	Yes

Source: Based on an analysis of the QA standards and procedures of QAA (UK), MAB (Hungary) and HAKA (Estonia). QAA (2022a[25]), *The Quality Assurance Agency for Higher Education*, https://www.qaa.ac.uk/; MAB (2022[26]), *Magyar Felsőoktatási Akkreditációs Bizottság [The Hungarian Accreditation Committee]*, https://www.mab.hu/en/home-page/; and HAKA (2022a[27]), *Estonian Quality Agency for Higher and Vocational Education (HAKA)*, https://HAKA.edu.ee/en/

3.2 Quality assurance of digital higher education

Based on a mapping of the standards and procedures for the external QA of higher education across OECD and EU jurisdictions, there are three main ways in which countries have responded to the challenges of assuring the quality of digital higher education. Building on a typology developed by Ossiannilsson et al. (2015, p. 35[6]), these are:

- ***No approach for the quality assurance of digital higher education***. In a first group of higher education systems (23 in total), no specific approach for the external QA of digital higher education was identified. In these systems, QA agencies apply the same standards for the formal review of higher education providers and programmes, regardless of delivery mode. No or only limited reference is made to "e-learning", "digital", "(fully) online", "hybrid" or "distance" education in the standards applied by the QA bodies, nor has any specific guidance been developed to support the implementation of the standards in digital settings.

- ***Common standards and guidance for the quality assurance of digital higher education***. In eight systems (**Australia**, **Estonia** (institutional accreditation), **Finland**, **New Zealand**, **Norway**, **Spain**, **Sweden**, **Switzerland** and the **United Kingdom**), QA agencies use common standards for the QA of digital and traditional study modes. In these systems, either the standards themselves are enhanced, by including specific considerations for digital education, or the standards are accompanied by specific (and non-binding) sectoral guidance – developed either by the QA agency itself or another (publicly funded) organisation – to support their implementation in digital settings.

- ***Specific standards for the quality assurance of digital higher education***. In twelve jurisdictions, specific or separate standards are applied for the QA of digital higher education, which are different from those that apply to in-person delivery.
  - A distinction can be made between standards that apply to all types or a specific type of digital education. In the **Czech Republic**, **Hungary**, **Japan**, **Portugal**, **Romania**, and **Spain** (programme review), for example, standards were identified that apply to fully online study programmes. **Ireland** and **Romania** have developed standards for providers of hybrid study programmes. In **Canada**, in addition to an overarching set of *Guidelines for Technology-Enhanced Learning* (Digital Learning Advisory Committee, 2022[28]), the Digital Learning Advisory Committee of the Province of British Columbia has proposed more specific standards for the QA of open educational resources (OER), digital literacy and micro-credentials.
  - The standards also differ depending on whether they include considerations for higher education providers, or for the implementation of QA processes at programme level. In two jurisdictions (**Ireland** and **Malta**), the standards apply to providers of digital higher education.

In nine systems (in **Canada**, **Croatia**, **Estonia** (e-course quality label), **Hungary**, **Japan**, **Portugal**, **Romania**, **Spain**, **US**), the standards include programme level quality indicators.

Table 2 below provides an overview of the different types of approaches identified across OECD and EU member countries. A more detailed overview is presented in Annex A (Table 15).

Table 2. Frameworks to the external quality assurance of digital higher education

Approach	Frameworks		Jurisdictions
No approach	**No or limited evidence of enhanced standards or guidance for digital higher education** Austria, Belgium (Flemish Community), Belgium (French Community), Chile, Colombia, Costa Rica, Denmark, France, Germany, Greece, Iceland, Israel, Italy, Korea, Latvia, Lithuania, Luxembourg, Mexico, Netherlands, Poland, Slovakia, Türkiye		23
Common standards and guidance	**Application of common standards and guidance for digital higher education** Australia, Estonia (institutional accreditation), Finland, New Zealand, Norway, Spain, Sweden, Switzerland, United Kingdom		9
Specific standards	**Standards applicable to all types of digital higher education (5 jurisdictions)** Canada (Campus Alberta Quality Council), Croatia, Estonia, Malta, United States (Distance Education Accrediting Commission (DEAC), NWCCU, NECHE, Higher Learning Commission (HLC))	**Standards applicable to specific types of digital higher education (8 jurisdictions)** *Fully online*: Czech Republic, Hungary, Japan, Portugal, Romania, Spain (quality label for distance learning and hybrid education) *Hybrid*: Ireland, Romania *Other*: Canada (British Columbia's Digital Learning Advisory Committee)	12
	Standards applicable to providers of digital higher education (2 jurisdictions) Ireland, Malta	**Standards applicable to digital study programmes (10 jurisdictions)** Canada (Campus Alberta Quality Council, British Columbia's Digital Learning Advisory Committee), Croatia, Czech Republic, Estonia (e-course quality label), Hungary, Japan, Portugal, Romania, Spain, United States (DEAC, NWCCU, NECHE, HLC)	

Source: Based on a review of the standards and procedures for the external QA of digital higher education across all OECD and EU member countries (see Annex A, Table 15).

3.2.1 No approach for the quality assurance of digital higher education

In the first group of jurisdictions (23 in total), no approach for the QA of digital higher education was identified. The same standards and processes are used for the accreditation of digital and traditional provision. While they may include an occasional reference to "e-learning", "online", "digital" or "distance", the standards applied by the QA body do not include a comprehensive set of e-learning considerations. There is also no evidence of the QA agency (or another publicly funded body) having developed specific sectoral guidance on how to implement the standards in digital settings.

In **Belgium (Flemish Community)** and the **Netherlands**, for example, where accreditation is carried out by the Dutch-Flemish Accreditation Organisation (NVAO), the assessment frameworks for institutional

review do not include any explicit reference to or consideration of "e-learning", "online", "digital" or "" (NVAO, 2020[29]), (NVAO, 2018[30]). In **Austria**, **France** and **Slovakia**, apart from occasional references to digitalisation such as the use of digital education technology to support student-centred learning and innovation in teaching and learning, the standards and guidelines for institutional accreditation do not include a comprehensive set of digitally-adapted standards or indicators (AQ Austria, 2021[31]), (Hcéres, 2021[32]), (SAAVS, 2020[33]).

3.2.2 Common standards and guidance for the quality assurance of digital higher education

In nine jurisdictions, common standards are applied for the external QA of digital and traditional modes of delivery. In some of these systems, either the QA agency itself, or another (publicly funded) body responsible for the quality enhancement of digital teaching and learning, has developed separate (and non-binding) guidance to support the implementation of national standards in digital settings. In some cases, specific considerations for digital education have been integrated in the QA framework itself underneath each standard.

Estonia has recently updated its *Guidelines for Institutional Accreditation* (HAKA, 2022b[34]), following a thematic analysis of the impact of the COVID-19 pandemic on the quality of the online teaching and learning activities of HEIs (HAKA, 2020a[35]). The guidelines include 12 standards[4] against which institutions are assessed every seven years as part of institutional reviews. For each standard, the guidelines include specific considerations for digital education. In response to the COVID-19 pandemic, **Finland's** Education Evaluation Centre (FINEEC) published an addendum to its *Audit manual for higher education institutions (2019-2024)*. In this manual, FINEEC states that the principles included in the manual "can be implemented either fully or partly online. The method of implementation will not affect the audit team's assessment, the price of the audit or the awarding of FINEEC's Quality Label or the Quality Label for Excellence" (FINEEC, 2020[36]). The external QA of higher education in Finland has an advisory role and is based on a system of comprehensive quality audits of HEIs carried out every five years, focused on all activities of the HEI. Similarly, the National Agency for Higher Education Quality Assessment and Accreditation (ANECA) in **Spain** sees HEIs and their internal QA systems as the most crucial factor for ensuring quality, regardless of the delivery mode. Rather than "creating 'ad hoc' devices for each technological or educational innovation" the agency believes it is more important to "have a flexible framework that accommodates them in the institutions' internal quality assurance systems" (ANECA, 2022a[37]). The **United Kingdom** presents an example of a system that has made a conscious move away from developing specific standards towards adopting common standards for digital provision (see Box 4).

New Zealand operates a mix of "academic audits" at institutional level (which are carried out every four years and focus on a specific theme) and programme level accreditation (Kirkwood and Cameron, 2013[38]). The standards used for all evaluation processes apply to all modes of delivery. For example, in relation to the teaching and learning environment, the guidelines for the Cycle 6 audit of institutions mention that the audit will include "both digital and physical infrastructure and resources" (Academic Quality Agency for New Zealand Universities, 2020, p. 14[39]). The programme accreditation guidelines also mention that "modes of delivery are determined and implemented by the universities. CUAP's role [i.e. the QA body] is confined to ensuring that appropriate methods are proposed" (Committee on University Academic Programmes, 2022, p. 19[40]). To support the quality enhancement of digital teaching and learning, the National Centre for Tertiary Teaching Excellence (Ako Aotearoa) has developed a set of supplementary (and non-binding) *National eLearning Guidelines*, independent from accreditation processes (Coolbear,

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[4] Strategic management, Resources, Quality culture, Academic integrity, Internationalisation, Teaching staff, Study programmes, Learning and teaching, Student assessment, Learning support systems, Research, development and/or other creative activity (RDC), Service to society.

2014[41]). Similarly, Flexible Education **Norway** (FuN), which organises and co-ordinates the activities of 50 providers of flexible education in the country, has produced a non-binding *Guide to Quality in Online Teaching and Learning* in 2018 (Flexible Education Norway, 2018a[42]), independent from formal accreditation processes carried out by NOKUT, the national QA body for higher education.

Box 4. The QAA's *Quality Code for Higher Education,* United Kingdom

In the United Kingdom, as early as 1999 QAA developed *Guidelines for Distance Learning* which were intended to "become the starting point for a code of practice for distance learning which will be incorporated into the wider QAA Code" (QAA, 1999[43]). These were replaced a few years later by a more extensive set of guidelines on *Collaborative provision and flexible and distributed learning*, following consultations with the higher education sector (QAA, 2004[44]). In recent years however, QAA has moved away from seeking to incorporate specific requirements for digital higher education into its national Quality Code towards using common standards for the QA of digital higher education. The United Kingdom's current *Quality Code for Higher Education* (QAA, 2018[45]) applies to all higher education providers operating in England, Wales, Scotland and Northern Ireland and includes a broad set of "standards" and "common practices".

Source: QAA (2018[45]), *UK Quality Code for Higher Education*, Quality Assurance Agency (QAA), London, https://www.qaa.ac.uk/quality-code

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In Sweden and Australia, the national QA agencies have developed guidance to support the quality enhancement of digital teaching and learning by HEIs, but these are non-binding. Common standards are applied for the formal QA of higher education, regardless of delivery mode. In **Sweden**, UKÄ (*Universitetskanslersämbetet*) already had guidelines for *E-Learning Quality* back in 2008 (UKÄ, 2008[46]). Despite recognising that "adjustments in the methods of evaluating higher education are required" and that "traditional quality criteria and evaluation methods do not identify and assess new aspects of higher education that are introduced by e-learning" (UKÄ, 2008, pp. 11-12[46]), there is no evidence of UKÄ using these guidelines in its regulatory QA procedures.

In **Australia**, the Tertiary Education Quality and Standards Agency (TEQSA) has developed a *Guidance Note on Technology-Enhanced Learning*, last updated in 2019, which provides a list of "risks to quality" in technology-enhanced learning (TEL) (TEQSA, 2019[47]). The risks are linked to the *Higher Education Standards (HES) Framework (Threshold Standards)*, the overarching legislative document against which all HEIs are assessed, and cover areas such as: the design of the course of study; admission and progression requirements; the specification and assessment of learning outcomes; delivery and staffing capabilities; the maintenance of academic integrity; fit-for-purpose learning and support environments; and QA mechanisms that encompass TEL specifically. TEQSA states that the Guidance Note is intended to represent "an illustrative rather than exhaustive listing of particular emphases and challenges for meeting the requirements of the HES Framework in a TEL environment […] providers will need to be able to demonstrate the effectiveness of their approach to TEL, rather than TEQSA prescribing a particular approach" (TEQSA, 2019, pp. 2-4[47]).

3.2.3 Specific standards for the quality assurance of digital higher education

In a third group of jurisdictions (12 in total), specific or separate standards are applied for the QA of digital higher education, which are different from those that apply to in-person delivery. A distinction can be made here between the standards in terms of the scope to which they apply (i.e. applicable to all types or specific types or aspects of digital education), and the level to which they apply (i.e. applicable to higher education providers or programmes).

Specific standards applicable to all types of digital higher education

In five higher education systems, QA agencies have developed specific standards that apply to all types of digital education (i.e. online, hybrid and blended education). In **Croatia**, for example, if an institution wishes to offer a programme of study in which at least 50% of the course or 50% of the teaching hours take place online, it is required to meet a number of additional criteria. These requirements are checked by the National Agency for Science and Higher Education (ASHE) as part of *ex ante* programme accreditation procedures. For example, the institution must provide: the programme learning outcomes; a detailed weekly schedule of online activities; a list of quality online learning materials, specifically prepared for the independent use of students; a list of other resources that will be used in the online course; clear and precise instructions for students' online work; and a clear description of how online assessment will be conducted (ASHE, 2016[48]).

Another example is Campus Alberta's Quality Council (CAQC) in **Canada**, which has developed *Additional quality assessment standards for programs delivered in blended, distributed or distance modes* (CAQC, 2011, p. 1[49]). These additional standards (see Box 5), first introduced in 2006 and last updated in 2011, were developed "with reference to national and international norms and benchmarks for blended, distributed and distance learning" (CAQC, 2011, p. 1[49]). Since 2021, institutions offering programmes in either of these study modes are required to meet the additional standards (CAQC, 2021, p. 61[50]).

Box 5. CAQC's *Additional quality assessment standards for programs delivered in blended, distributed or distance modes***, Canada**

In total, CAQC's *Additional quality assessment standards for programs delivered in blended, distributed or distance modes* cover 18 standards under four categories:

- *Institutional commitment:* risk management, privacy, identity, confidentiality, accessibility, intellectual property and technology renewal
- *Programme planning and design*: appropriate planning, teamwork, networked learning, and course development and evaluation
- *Learners:* advice, support, services, and hardware and software considerations
- *Academic staff*: academic oversight of programmes and adequate technology training and technical support

Source: CACQ (CAQC, 2011, p. 1[49]), *Additional quality assessment standards for programs delivered in blended, distributed or distance modes*, Campus Alberta Quality Council (CACQ), Edmonton, https://caqc.alberta.ca/media/1092/caqc_distance_program_standards.pdf

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Specific standards applicable to specific types or aspects of digital higher education

In eight systems, specific standards were identified that applied for the external QA of specific types or aspects of digital education (e.g. fully online or hybrid provision). In the **Czech Republic**, **Hungary**, **Japan**, **Portugal**, **Romania** and **Spain**, for example, specific standards exist for the *ex ante* accreditation of fully online study programmes (NAB, 2016[51]), (A3ES, 2021[52]), (Japanese Ministry of Education, 1981[53]), (MAB, 2017a[54]), (MAB, 2017b[55]), (ARACIS, 2020[56]). In these systems, fully online education is often referred to as "distance education" in national regulation or standards, and HEIs are required to meet strict requirements in order to be allowed to offer digital/distance education. In **Ireland** and **Romania**, standards have been identified that include specific quality considerations for hybrid education (ARACIS, 2022[57]), (QQI, 2018[58]).

In the *Statutory Quality Assurance Guidelines for Providers of Blended Learning Programmes*, developed by Quality and Qualifications Ireland (QQI) in 2018, hybrid education is defined as "the integration of classroom face-to-face learning experiences with online learning experiences" following the same definition as Garrison and Kanuka (2004[59]). The guidelines are not intended to "prescribe *how* providers are to operate blended learning programmes or how to establish their internal QA procedures". Rather, HEIs are "expected to have internal systems of quality assurance for programmes with blended learning and related services that are appropriate to their individual contexts and include mechanisms that successfully monitor the effectiveness of those systems" (QQI, 2018, p. 5[58]). For private providers, the guidelines are also used to review and approve processes at a programme level. The development of the guidelines included a sector-wide consultation, and they adopt a multi-level structure, with ten quality domains and 50 indictors across three contexts: the organisational context, the programme context and the learner experience context (see Table 3). In February 2022, QQI launched a call for tenders to revise the existing guidelines and expand their scope to fully online programmes. In the province of British Columbia in **Canada**, the Digital Learning Advisory Committee is developing even more specific national standards and guidelines for digital literacy, ethics, accessibility and inclusion, as well as OER and micro-credentials, to supplement a set of national *Guidelines for Technology-Enhanced Learning* (Digital Learning Advisory Committee, 2022[28]).

Table 3. Overview of QQI guidelines for providers of blended learning programmes, Ireland

Quality domain	Indicators
Organisational context	
The focus of this section is on the strategic and institution-wide aspects of managing quality for blended learning, including administrative and technical infrastructure requirements for appropriately skilled personnel.	
Strategy and planning for blended learning	The provider's strategy, infrastructure and policies systematically address and enable existing or planned arrangements for blended learning (incorporating online learning).
Infrastructure and resources	The infrastructure and resources required to support good quality blended learning are understood, planned, and routinely monitored and evaluated. These arrangements should take into account that while online, learners are likely to be remote from the provider and from teachers and/or assessors. There is an institutional approach to these matters.
Published expectations on blended learning	The provider has approved and published expectations for the overall quality of the blended learning provision, including expectations on the effectiveness and accessibility of learning resources and other learning materials to support online provision. The provider has also approved and published expectations for the effective delivery of teaching and learning, and assessment in a blended learning context, which are available to stakeholders.
Learners outside Ireland	Where the online learning element is to be offered to learners based outside of Ireland, due diligence and risk management arrangements are robust and fit-for-purpose.
Collaboration and other partners	Where a provider is relying on a second provider, partner or collaborator to provide aspects of blended learning, such as online learning, a number of aspects are covered by the internal QA procedures.
Programme context	
The focus of this section is on the key issues and principles of good practice in provider responsibility for assuring quality in the design, development, delivery and evaluation of programmes and modules that include blended learning.	

Quality domain	Indicators
Programme outcomes	The programme, as a whole, is intended to achieve learning outcomes. Online learning is effectively integrated into the programme for this purpose. Overall programme design is informed by best practice in curriculum design.
Learning resources, materials and delivery mechanisms	Learning resources, materials and delivery mechanisms are appropriate, fit-for-purpose, monitored and reviewed.
Approval and programme validation processes	Approval and validation processes for blended learning programmes, including online learning modules, are appropriate and fit-for-purpose.
Learner experience context	
This section relates to key issues and principles of good practice in provider responsibility for supporting learners, as groups/cohorts and as individuals.	
Support available to learners	Learners are supported to make informed choices about participating in a blended learning programme and to develop the necessary independent study skills to successfully progress towards becoming an autonomous learner. The level and nature of support available to learners is clear.
Equality of opportunity	Learning and teaching activities and associated resources provide every learner with an equitable, fair and realistic opportunity to achieve the intended learning outcomes.

Source: QQI (2018[58]), *Statutory quality assurance guidelines for providers of blended learning programmes,* QQI, Dublin, https://www.qqi.ie/sites/default/files/media/file-uploads/Statutory%20QA%20Guidelines%20for%20Blended%20Learning%20Programmes.pdf

Specific standards applicable to providers of digital higher education

In two higher education systems, specific standards were identified that are applied for the accreditation of providers of digital higher education. In addition to **Ireland** (discussed earlier in this section), in **Malta** providers wishing to offer digital education must comply with a set of *Guidelines for the Quality Assurance of Online Learning Providers* (Malta Further and Higher Education Authority, 2021[60]) and undergo external review by digital education experts. Institutions are also asked to update their internal QA procedures in line with the guidelines. The guidelines are based on the nine quality domains included in the *Quality Assurance of Online Learning Toolkit* produced by APEC (2019[61]), as well as the *E-Learning Considerations* developed by ENQA (Huertas et al., 2018a[9]). They apply to both (fully) online and hybrid education and are structured around eight quality domains.[5] For each domain, the guidelines provide: a definition of the standard; which national standards for internal QA they apply to; a list of indicators; further guidance for smaller HEIs; and supporting resources to advise institutions on how to implement the standards. Table 4 presents an example of the guidelines for quality domain 1 (Leadership and management).

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[5] Leadership and management; staffing profile and professional development; review and improvement; resources; student information, experience and support; assessment and integrity; learning outcomes; and curriculum design.

Table 4. Extract from the *Guidelines for the quality assurance of online learning providers*, Malta

Domain 1: Leadership and management	Guidelines
Definition	The top positions in an educational institution are held by active promoters and supporters of online and blended training by providing the necessary vision, mission, strategy and policies. They also nurture a culture of quality through consultation and cyclical reviews.
Applicable MFHEA internal quality assurance standards	Standard 1: Policy for quality assurance Standard 2: Institutional priority
Indicators for all HEIs	1. Online and blended learning are part of the institution's vision 2. Strategic and policy documents mention quality online and blended courses 3. A quality assurance policy covers online and blended delivery 4. A key managerial post or unit dedicated to the management of online and blended learning from an educational point of view is allocated at the institution 5. Budgets that cater adequately for the technical infrastructure, training and systems for online and blended delivery are clearly included in the total budget for the institution 6. There is evidence of adequate cyclical reviews of online and blended programmes/courses
Further guidance for small HEIs	1. It is recommended to bring expertise from outside the organisation to build capacity and development /review the institution's vision, strategic policy and quality assurance policy 2. It is easier to manage modular, off-the-shelf, well-supported and cloud-based software solutions. Institutions are advised to pay attention to licensing fees, whether based on users, time, volume of data handled etc. Institutions are advised to do their homework first before talking to marketeers and salesmen. Outsource and use the cloud infrastructure. 3. A key managerial unit or post is necessary. In the case of a small organisation it is more likely the responsibility will be carried by just one person but make sure that the person has the necessary qualifications and experience in online and blended learning. The recruitment should be done before investing in any technology and the appointed person(s) should be involved in the drawing up of the strategic and policy documents. 4. The cyclical review of courses and programmes for which outsiders from the organisation are appointed can sometimes lead to talent spotting and recruitment for other academic roles within the organisation. 5. Keep up to date with education and technology trends. 6. Take a horizontal approach through teamwork, rather than a top-down or bottom-up approach in terms of task and project management. 7. Seek affiliations and partnerships with small, like-minded institutions in and outside education that share at least part of your vision. 8. Check funding provided by the European Union institutions, national funds and other funds/sponsorships from other institutions for capacity building and institutional development.
Supporting resources	1. Check Ministry for Education of Malta, the European Union institutions and other international institutions like UNESCO for policy papers and strategic documents.

Domain 1: Leadership and management	Guidelines
	2. Moodle (http://www.moodle.org/) is a free open-source virtual learning environment (VLE) (no licensing fees for using it but institutions need to pay for its server hosting and maintenance online). It is used by the major public HEIs in Malta and its global popularity means there is a strong community of practice with readily-available free support.

Source: Adapted from Malta Further and Higher Education Authority (2021[60]), *Guidelines for Quality Assurance - For Online Learning Providers in Malta*, Malta Further and Higher Education Authority, Valletta, https://mfhea.mt/wp-content/uploads/2021/10/Guidelines-for-FHEI-V1.pdf

Specific standards applicable to digital study programmes

In ten jurisdictions, specific standards are applied for ensuring the quality of digital education at programme level. The **Hungarian** Accreditation Committee (MAB), for example, uses two evaluation templates for the *ex ante* accreditation of bachelor's and master's programmes. The templates include a detailed list of additional evaluation criteria for distance (i.e. fully online) learning programmes, including: details on the unit responsible for conducting the distance education activities; the curriculum and one online module per course; the frequency and themes of consultations; the qualification, employment status and competencies for online instruction of teaching staff; and information on the available technical infrastructure (MAB, 2017a[54]), (MAB, 2017b[55]). In Japan, the Ministry of Education, Culture, Sports, Science and Technology has adopted specific Standards for the Establishment of Distance Learning Programs at Universities (Japanese Ministry of Education, 1981[53]). Prior to the COVID-19 pandemic, in traditional face-to-face delivery at least half of instruction needed to be delivered on-campus. Today, the government and several experts are starting to reflect on possible amendments to the existing Standards for the Establishment of Distance Learning Programs at Universities to make it easier for HEIs to launch fully online and hybrid study programmes (Japanese Ministry of Education, Culture, Sports, Science and Technology, 2022[62]).

Romania is an example of a system that has recently introduced changes to allow HEIs to offer digital programmes. In 2020, the Agency for Quality Assurance in Higher Education (ARACIS) adopted standards and guidelines for the QA of distance and part-time learning programmes (ARACIS, 2020[56]). The standards and guidelines are integrated into the ESG (ENQA, 2015[5]) as the overarching QA framework for higher education and include two sets of additional criteria: first, a more limited set of criteria for institutions seeking to launch a new programme in a distance learning or part-time format, and second, a more elaborate set of criteria to be met within the first two years of the programme's initial launch. More information on the standards and guidelines applied by ARACIS is provided in Box 6. As mentioned above, ARACIS has recently also developed separate guidelines for the QA of hybrid programmes (ARACIS, 2022[57]).

In three other jurisdictions (Estonia, Spain and the US), the national QA agency or other (sometimes private) bodies offer institutions with the option to have the quality of their digital study programmes reviewed by a team of external experts, but this is not mandatory. In **Estonia**, instructors working in general, vocational and higher education the opportunity to apply for an external review of their digital courses and obtain an "E-Course Quality Label" (HAKA, 2020b[63]). The label is awarded to courses that meet the requirements included in an interactive online *Guide to Creating a Quality E-Course* (HAKA, 2022c[64]). In **Spain**, institutions can apply for a Quality Label for Distance Learning and Hybrid Education with ANECA, the national QA body. The label is designed for bachelor's and master's programmes, and degrees are evaluated based on "a set of standards defined according to the principles of quality, relevance, transparency, acknowledgement and mobility considered in the European Higher Education Area, in collaboration with national and international experts" (ANECA, 2022b[65]). As of February 2022, the quality label has been awarded to 12 degree programmes from five universities in Spain and Mexico (ANECA, 2022c[66]).

Box 6. Standards and guidelines for distance and part-time learning programmes, Romania

Romania's *Standards and Guidelines on External Evaluation of the Quality of Distance Learning (DL) and Part-Time (PTL) Degree Programmes* were published in October 2020, developed with financial support from the European Commission and World Bank. Distance learning is defined broadly as a form of education characterised by "the physical separation of teachers and students in the learning process and the use of diversified technologies to facilitate student-teacher and student-student communication [… and] may be offered entirely at a distance or it may be a combination of distance and face-to-face educational activities carried out in the higher education institution (Blended Learning)" (ARACIS, 2020, p. 8[56]). Distance learning and part-time learning are seen as "alternative forms of education that provide initial, further or conversion training for a wide range of citizens in different fields" (ARACIS, 2020, p. 8[56]). To be granted "provisional operation authorisation" for distance learning/part-time programmes, HEIs need to demonstrate – in addition to meeting the guidelines for regular delivery – that they have the required financial and online learning resources in place to offer at least one full study cycle. Within two years of launching the distance learning/part-time programme, institutions need to apply for a full programme review by ARACIS based on the full set of standards and guidelines. After the initial review, programmes are periodically reviewed every five years.

Chapter 3 of the guidelines lists ten requirements (including standards, benchmarks and performance indicators) with which institutions are required to demonstrate compliance as part of *ex post* programme reviews:

1. Strategies and policies on the integration of distance learning technologies
2. Administrative and managerial structures
3. Designing the structure of distance learning/part-time degree programmes
4. Learning resources
5. Specific infrastructure
6. Support for students, teaching and teaching-aide staff
7. Assessment of the test results
8. Quality assurance of teaching staff
9. Quality assurance of distance learning/part-time programmes
10. Public information

Source: ARACIS (2020[56]), *Methodology and Guidelines on External Quality Evaluation in Higher Education in Romania. Part VI: Specific Standards and Guidelines on External Evaluation of the Quality of Distance Learning (DL) and Part-Time Learning (PTL) Degree Programmes*, ARACIS, Bucharest, https://www.aracis.ro/wp-content/uploads/2021/11/Result-1.-Part-VI-METHODOLOGY-DISTANCE-LEARNING-EN.pdf

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In the **United States**, where higher education accreditation and QA is carried out by a variety of regional, non-profit and private accreditors, institutions can choose to have the quality of their digital provision reviewed by a range of different organisations. The Distance Education Accrediting Commission (DEAC), for example, offers programme accreditation to institutions from the secondary school level through to professional doctoral degree-awarding institutions across the United States. The accreditation reviews target institutions with programmes in which 51% (or more) of instruction is delivered remotely (DEAC, 2020[67]). More details on DEAC standards are presented in Box 7 below. The New England Commission for Higher Education (NECHE), the Northwest Commission on Colleges and Universities (NWCCU) and the Higher Learning Commission (HLC) – three of the six primary regional higher education accrediting bodies in the US, recognised by the US Department for Education and/or the Council for Higher Education

Accreditation (CHEA) – accredit institutions offering digital study programmes based on the 2009 *Guidelines for the Evaluation of Distance Education (On-Line Learning)* (NECHE, 2018[68]), (NWCCU, 2016[69]), (HLC, 2009[70]). The guidelines were developed by the National Council for State Authorization Reciprocity Agreements (NC-SARA) and revised in 2021 (NC-SARA, 2021a[71]). The guidelines represent "a collection of elements designed to inform, but not limit, accreditors and states in their judgment of satisfactory levels of quality in the offering of programs through distance education" (NC-SARA, 2021b, p. 2[72]).

Box 7. The DEAC Accreditation Handbook, United States

DEAC's standards and procedures for the QA of distance education programmes are set out in an *Accreditation Handbook* containing *Accreditation Standards.* The handbook has 12 standards consisting of core components. As an example, five standards and some of their core components are presented below:

- *Programme outcomes, curricula and materials*. Here, DEAC reviews the description and appropriateness of programme outcomes, the way in which the curriculum is delivered, the comprehensiveness, development and delivery of the curriculum and instructional materials, and the quality of the educational media, learning resources and assessment methods used.

- *Education and student support services*. As part of this standard DEAC evaluates, among other things, the appropriateness of the technology used, grading policies, data privacy and confidentiality policies, student complaint policies, and student support services.

- *Student achievement and satisfaction*. As part of this standard, DEAC reviews the institution's assessment plan for documenting, monitoring and analysing data on student achievement and satisfaction.

- *Academic leadership and faculty qualifications*. This standard covers academic leadership's capacity and infrastructure to support the effective delivery of distance education, as well as whether faculty/instructors are qualified and have the appropriate credentials to teach the subject at the assigned level.

- *Facilities, equipment, supplies, record protection and retention*. Under this standard, DEAC assesses whether sufficient physical and fiscal resources and support systems are in place to deliver quality distance education programmes.

The other standards included in DEAC reviews are: institutional mission; institutional effectiveness and strategic planning; advertising, promotional literature, and recruitment of personnel; admission practices and enrolment agreement; financial disclosure, cancellations and refund policies; and governance arrangements. For institutions that fail to meet DEAC standards, a number of remedial steps are offered. Initially, an accreditation decision may be deferred. Deferrals can last up to 12 months, during which an institution is able to provide reports on its progress towards meeting accreditation standards, and undergo a follow-up on-site evaluation. If insufficient evidence is provided, accreditation can be denied and the decision published on the DEAC website.

Source: DEAC (2020[67]), *The DEAC Accreditation Handbook*, Distance Education Accrediting Commission (DEAC), Accreditation Handbook, Washington D.C., https://www.deac.org/Seeking-Accreditation/The-DEAC-Accrediting-Handbook.aspx

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3.2.4 Eight key principles for the quality assurance of digital higher education

As discussed in the previous sections, so far only a limited number of jurisdictions has developed common or specific standards for digital higher education. Researchers and practitioners from a wide range of private, non-profit, non-governmental and academic organisations active in the field of QA and (digital) education have been quick to develop quality frameworks for the (higher) education sector that contain specific standards and indicators for fully online or hybrid education, or specific quality considerations for digital education at the institution, programme, course, individual learner or instructor level. An overview of such quality frameworks, which have been primarily developed to inform institutional self-assessment of digital learning by HEIs, can be found in publications by Esfijani (2018[13]), the ICDE (Ossiannilsson et al., 2015[6]) and the EUA (Volungevičienė et al., 2021[14]). As the principal responsibility for quality rests with HEIs and national standards should be informed by the work of HEIs, the standards and indicators included in these frameworks can be used as a basis by QA agencies to develop evidence- and practice-based digital education standards, to be integrated in existing QA frameworks.

Table 5. Key principles for the quality assurance of digital higher education

PLAN & ADJUST: Institutional strategy, quality culture and infrastructure for digital teaching and learning	
Description	The institution has clear objectives in all its areas of activity, as well as clear policies and processes for QA and development. These are developed with the participation of the relevant stakeholder groups, set out in writing and communicated transparently. Quality-related decisions are evidence-based, recorded in writing and communicated clearly. The implementation of measures takes place in dialogue with the departments involved and is discussed as part of follow-ups. The results flow into the revision of goals, principles and processes and the "Plan-Do-Check-Adjust" cycle begins again.
Principles	1. Vision, mission and strategy for digitalisation and innovation 2. Organisational quality culture centred on digitalisation, innovation and collaboration 3. Digital education infrastructure
IMPLEMENT: Implementation of quality assurance processes and supports for digital teaching and learning	
Description	Whenever possible, QA and development processes are carried out on a decentralised basis, by the directly responsible unit. The university supports the QA and development processes centrally, through professional services and the provision of the necessary resources.
Principles	4. Digital course content, design, delivery and assessment 5. Supporting and incentivising staff professional development 6. Preparing and supporting students for digital learning
MONITOR: Feedback and performance monitoring of digital teaching and learning quality	
Description	Information obtained through the QA and development processes is communicated to relevant stakeholders at all university levels within the framework of feedback loops. In addition to the quality of the services provided, the institution regularly reviews its QA and development system based on qualitative and quantitative evidence, external reviews, and/or benchmarking.
Principles	7. Monitoring the quality of digital teaching and learning 8. Strengthening feedback and monitoring practices

Source: Based on an analysis of the quality domains included in 12 international quality frameworks for digital higher education (Annex B, Table 16 and Table 17) and Tague, Nancy R. (2005[73]), "Plan–Do–Study–Act cycle", *The quality toolbox*, https://www.worldcat.org/title/quality-toolbox/oclc/57251077

Ossiannilsson et al. (2015[6]), Esfijani (2018[13]) and Jung (2022[4]) note that while almost all frameworks contain certain deficiencies or missing indicators, the differences between the frameworks relate more "to the grouping of criteria and the granularity of the detail applied at the performance indicator levels rather than the inherent approach to quality assurance" (Ossiannilsson et al., 2015, p. 7[6]). To achieve quality, they argue, it is important for QA agencies and HEIs to take a comprehensive view that supports and evaluates quality across the entire institution: "digital success extends beyond technology adoption and beyond the IT organisation. It encompasses the entire institutional leadership and community" (Grajek, 2016[74]). Based on an analysis of the quality domains included in twelve international quality frameworks for digital higher education that feature prominently in the literature and are being used by HEIs, a number of common, less common and emerging quality domains can be identified (see Annex B, Table 16 and Table 17). Structured along the "Plan-Do-Check-Adjust" cycle developed by Tague (2005[73]), eight key principles for the QA of digital higher education can be identified (see Table 5).

3.3 Quality enhancement of digital higher education

In addition to embedding the QA of digital higher education in formal accreditation processes, an increasing number of QA bodies has started playing a more active role in supporting institutions to improve their internal QA systems for digital teaching and learning. On the one hand, this increased focus on quality enhancement is a response to the COVID-19 pandemic, during which many institutions required advice and support on how to guarantee quality as they moved their education online. On the other hand, it is a wider reaction to calls from international organisations such as INQAAHE, ENQA and the European Commission to "move further towards the use of institutional-based external quality assurance" and "consider the possibility of allowing for self-accreditation of programmes" (Council of the European Union, 2022, p. 12[75]). In systems where external QA has become more "hands off" and has greater confidence in HEIs and their ability to independently assure the quality of their (digital) education, QA agencies have more capacity to take on a "supporting" or "collaborative" role, in addition to conducting periodic quality reviews.

Three common types of QE-oriented activities can be identified across QA agencies:

- *Development of a common terminology and guidelines.* Quality standards and indicators for digital higher education are often accompanied by guidelines to support HEIs in the implementation of national quality standards. Most of these guidelines also include a clear definition and taxonomy of digital education to build a common understanding among higher education stakeholders.

- *Collection and dissemination of resources and good practice.* As the bodies responsible for accrediting HEIs and study programmes within their jurisdiction, QA agencies are uniquely placed to collect and disseminate best practice for the QA of digital higher education. Although such practice remains limited to date, some QA bodies have started to carry out ad hoc thematic reviews of national and international practices for the QA of digital higher education, and to actively share best practice with HEIs through various fora.

- *Training and support for quality assurance staff.* In a small number of jurisdictions, QA agencies provide specific training or support for QA staff to develop institutions' internal QA systems. This training is often aimed at informing QA staff about new or revised QA procedures, as well as how to carry out internal QA around specific quality domains.

3.3.1 Development of a common terminology and guidelines

As discussed in Section 3.2, a small number of QA agencies has developed quality standards and associated indicators for digital higher education, which are often accompanied by guidelines to support HEIs in their implementation An example is **Malta**, which, in addition to its national standards and

guidelines for institutional accreditation, has developed a *Step-by-Step Guide to Internal Quality Assurance* (National Commission for Further and Higher Education Malta, 2017a[76]). While not specifically focused on digital education, the guide is "aimed mainly at providers that are still developing their IQA [internal quality assurance] policy" (National Commission for Further and Higher Education Malta, 2017a, p. 5[76]) and addresses all 11 QA standards included in the national QA framework for further and higher education (National Commission for Further and Higher Education Malta, 2017b[77]), as well as the ESG (ENQA, 2015[5]).

The standards and guidelines developed by QA agencies often also include a definition and taxonomy for digital education, to build a common understanding of digital education among higher education stakeholders. For example, **Malta**'s *Guidelines for the Quality Assurance of Online Learning Providers* (Malta Further and Higher Education Authority, 2021, p. 6[60]), provide definitions for "asynchronous learning", "blended learning", "contact hour", "face-to-face learning", "online learning' and "synchronous learning". Similarly, **Romania**'s guidelines for the *External Evaluation of the Quality of Distance Learning (DL) and Part-Time (PTL) Degree Programmes* (ARACIS, 2020, pp. 7-9[56]) include definitions for a wide variety of terms associated with digital education. In the **United Kingdom**, QAA has developed a *Taxonomy for Digital Learning* (QAA, 2020a[78]), providing definitions for the range of terms used by higher education providers in the United Kingdom to describe their digital offers (e.g. blended, hybrid, online, virtual, distance, remote, face-to-face, in-person). It also provides an overview of methods for delivering digital teaching and learning activities. QAA states that the guide has been designed to "support providers to develop their ways of talking about digital methods of delivery, articulating what students can expect and therefore better assure themselves that quality and standards are being maintained" (QAA, 2020a, p. 1[78]).

3.3.2 Collection and dissemination of resources and good practice

QA agencies are also supporting HEIs to enhance their internal QA practices by collecting and disseminating national and international resources and good practice for the QA of digital provision. In **Australia**, for example, TEQSA published a series of key considerations for providers of online delivery in April 2020 (TEQSA, 2020[79]) as well as establishing an *Online Learning Good Practice* website (TEQSA, 2022a[80]). In the **United Kingdom**, QAA offers an online discussion forum, training sessions and instructional videos to help institutions understand what best practice in digital learning looks like. Four recently published best practice manuals collating "Hallmarks of Success" (QAA, 2022b[81]) focus on: Student-centred learning and teaching; Assessment in digital and blended pedagogy; Programme design, approval, and management; and Supporting and empowering teaching staff.

Some QA bodies have also carried out specific thematic reviews of the internal QA of digital teaching and learning – both nationally and internationally – to collect and disseminate best practice among the institutions for which they are responsible. In many cases, such reviews were conducted in response to the COVID-19 pandemic. In **Estonia** and the **United Kingdom**, for example, the national QA bodies assessed the impact of the COVID-19 pandemic on HEIs to identify key challenges and lessons learned on how to maintain quality, which were then published and disseminated among HEIs (HAKA, 2020a[35]), (QAA, 2020b[82]), (QAA, 2020c[83]). QAA also undertook a baseline evaluation of how higher education providers in Wales are assuring and managing the quality of digital learning to identify emerging practices and enhancements (QAA, 2021[84]). In some systems, thematic reviews of digital learning were already being conducted prior to the pandemic. In December 2017, for example, UKÄ in **Sweden** conducted a survey of Swedish HEIs to report on "the HEIs' strategies and range of distance learning courses and degree programmes, and the support they offer distance students" (UKÄ, 2018, p. 4[85]). In 2016, the QA agency also published a report on the use of massive open online courses (MOOCs) in Swedish higher education (UKÄ, 2016[86]). However, thematic reviews of digital learning are not common and are rarely.

3.3.3 Training and support for quality assurance staff

Finally, a small number of QA agencies also provides specialised training and support to QA staff working in HEIs, although evidence of training focusing specifically on the QA of digital education is limited. Training for QA staff is important, as evidence shows that QA staff are often appointed "with minimum preparation or training; and only external quality assurance requirements to guide internal action" (Greere, 2022, p. 2[87]). A lack of training also reinforces a persisting issue among HEIs of seeing external QA as a "box-ticking exercise" purely to satisfy external expectations. Such a "compliance approach is recognised as rendering less value for both institutions and implementing authorities" (Greere, 2022, p. 2[87]).

In **Spain**, for example, ANECA has developed the specific procedures to support Spanish HEIs with the development of their internal QA systems and teacher performance assessment systems (ANECA, 2022d[88]), (ANECA, 2022e[89]). In the **United Kingdom**, CLICKS and QAA recently organised a joint webinar on "Quality Assuring Academic Standards and Online Delivery" (CLICKS, 2022[90]).

3.4 Building the capacity of quality assurance agencies

Finally, it is important for QA bodies to strengthen their own expertise on digital education to enable the effective implementation of QA and QE activities for digital teaching and learning. International discipline-specific accreditation bodies can play an important role in supporting QA agencies in this process.

3.4.1 Strengthening thematic expertise on digital higher education

In addition to ensuring that external review panels include experts with the relevant subject-specific expertise (which is now the case in most QA agencies across the OECD), some QA bodies have started to include experts with specific expertise in the field of digital education. In **Australia**, for example, TEQSA's *Register of External Expertise* includes a wide range of digitalisation experts, including experts on cybersecurity, information systems, learning analytics, and online learning, assessment and student learning (TEQSA, 2022b[91]). In **Spain** and **Estonia**, QA agencies use national and international experts in the field of digital learning to evaluate applications for the Spanish Quality Label for Distance Learning and Hybrid Education, and the Estonian E-Course Quality Label (ANECA, 2022b[65]), (HAKA, 2020b[63]). Similarly, in **Switzerland** the composition of the expert group reflects "the profile of the HE institution and takes account of the type and specific characteristics of the institution when assessing its quality assurance system. Those specific characteristics may apply to its teaching methods (e.g. distance learning) or to fields of teaching, research and service provision" (AAQ, 2018, p. 30[92]). In the **United States**, specialist organisations such as DEAC and Quality Matters offering accreditation services for HEIs' digital provision.

3.4.2 The role of transnational and discipline-specific accreditation bodies

Transnational quality organisations such as INQAAHE and ENQA can play a significant role in supporting QA agencies to strengthen their internal expertise for the QA of digital higher education. An important first step would be the adoption of shared transnational standards and guidelines to inform the work of QA agencies, as seen in the **United States** with the *Proposed 21st Century Distance Education Guidelines*, to steer the work of regional accrediting bodies (NC-SARA, 2021a[71]). In **Europe**, this could be achieved through a further revision of ENQA's *Considerations for the quality assurance of e-learning provision* (Huertas et al., 2018b[93]), which take into account the most recent developments of QA agencies and HEIs in the area of digital education and QA, and are broad enough to adapt to national and institutional contexts. Once such guidelines have been developed, transnational bodies could monitor their implementation by QA agencies as part of cyclical external reviews, as is recommended in Standard 2.7 of the ESG (2015[5]), and could also facilitate cross-border QA of digital higher education for those QA agencies that might lack the necessary national expertise on digital education in their external review panels.

Finally, international professional discipline-specific bodies also play a key role in regulating and quality assuring institutions around the globe. While there are many such bodies listed as INQAAHE members, across various disciplines from Accounting, Nursing, Pharmacy, Prosthetic to Theological education, a good example is the **Association to Advance Collegiate Schools of Business (AACSB)**, which has over 900 accredited members in more than 50 countries (AACSB, 2020[94]). To gain AACSB accreditation, business schools must meet nine standards. Two of these standards (i.e. Standard 2 – Physical, virtual, and financial resources and Standard 7 – Support for teaching effectiveness) include specific requirements for digital provision. This example highlights that important quality standards exist beyond those developed by national and transnational QA bodies and these can influence the development of digital education.

4 Institutional quality management of digital higher education

This section discusses trends in how HEIs are managing the quality of digital higher education, following the eight key principles for the QA of digital higher education presented in Section 3. For each principle, this section proposes quality indicators drawn from international quality frameworks for digital higher education.

4.1 An integrated approach to the institutional quality management of digital higher education

Assuring the quality of digital teaching and learning is first and foremost the responsibility of HEIs themselves. In a recent article on the QA of online, open and distance education, Jung (2022[4]) notes that HEIs across the world have come to realise the importance of establishing internal QA systems to "meet the challenges and demands relating to public funding, social accountability, and the satisfaction of various stakeholders, not to mention the competitiveness of the education offered" (Jung, 2022, p. 7[4]). A review of international literature on the internal QA of digital higher education suggests that there is no need for HEIs to develop entirely separate procedures for the QA of digital teaching and learning. Instead, institutions should seek to integrate specific considerations for digital education into their existing internal QA systems (Ossiannilsson et al., 2015[6]), (Jung, 2022[4]).

This section discusses trends in how HEIs are managing and supporting the quality of their digital offerings by reviewing the eight key principles for the QA of digital higher education presented in Section 3.2.4. A list of associated indicators is presented for each principle, based on analysis of the indicators included in five widely used international quality frameworks for digital higher education: the benchmarking tool developed by the Australasian Council on Open, Distance and e-Learning (ACODE) (Sankey and Padró, 2016[95]), E-xcellence (EADTU, 2016[96]), DigCopmOrg (Kampylis et al., 2015[18]), EMBED (Goeman, Poelmans and Van Rompaey, 2018[97]), and Quality Matters (Quality Matters, 2018[98])). These frameworks were selected as they represent a variety of regions (i.e. Europe, Australasia, and the United States) and, together, cover standards and indicators for all types of digital education (i.e. fully online, hybrid, blended) as well as all levels of education (i.e. both institution and programme level). In addition, five more specialised quality frameworks were used to inform the development of more specific indicators at the course level (i.e. quality indicators for digital course content, design, delivery and assessment) and the individual learner/instructor level (i.e. digital capabilities of instructors and students), which are not always covered in the same level of detail in quality frameworks focusing on institution and programme level indicators (see Annex C, Table 18).

The indicators presented in the following sections can be used by QA agencies and institutions as a basis for the development and integration of digitally enhanced standards and indicators into national and/or institutional quality frameworks, by adding or removing indicators deemed relevant for their national and/or institutional context.

4.2 Plan & Adjust: Institutional strategy, quality culture and infrastructure for digital teaching and learning

The first step in supporting high-quality digital practices across the institution is the development of an institutional strategy (i.e. centralised guidance) for the QA of digital higher education. In addition to this, it is important for a strategy to be designed and implemented with the support of stakeholders across the institution (i.e. decentralised design and implementation), and to be regularly adjusted based on evidence resulting from internal performance monitoring and feedback. Maturity is achieved when an institution (or faculty) reaches the level of a "learning organisation" where "leadership is shared, and all processes and workflows are integrated and continuously evaluated to better serve stakeholders" (Ubachs and Henderikx, 2022, p. 5[99]). Finally, the provision of an up-to-date digital infrastructure is another crucial precondition for ensuring high-quality digital teaching and learning. Based on an analysis of the indicators included in ten quality frameworks for digital higher education (see Annex C, Table 18), Table 6 presents twelve common quality indicators related to ensuring a high-quality institutional strategy, quality culture and infrastructure for digital teaching and learning.

Table 6. Common quality indicators for planning and adjusting the institutional strategy, quality culture and infrastructure for digital teaching and learning

Principles	Common quality indicators
1. Vision, mission and strategy for digitalisation and innovation	1. **Digital education strategy**: The institution has a digital education strategy that is widely understood and integrated into the overall strategies for institutional development and quality improvement, including the institution's ethical and legal framework. 2. **Communication**: Policies, procedures and guidelines on the use of digital teaching and learning and associated QA processes are well communicated and integrated into processes and systems. 3. **Implementation plan**: The strategy is supported by an implementation plan that provides a framework on how digital teaching and learning should be used at both the course and programme levels. 4. **Monitoring**: The implementation of the strategy is regularly monitored, based on clear and measurable criteria, quantitative and qualitative evidence, and broad stakeholder engagement.
2. Organisational quality culture for digitalisation, innovation and collaboration	5. **Collaboration and networking**: Networking, sharing and collaboration around digital teaching and learning is promoted. Communities for sharing best practice are facilitated, actively built and maintained. Processes and platforms are in place for sharing pedagogical practices and digital education content.
3. Digital education infrastructure	6. **Digital backbone**: The institution has resources and processes in place to ensure strong network connectivity (i.e. on-campus and off-campus networking), on-campus technical equipment (i.e. servers and audio-visual equipment) and end-user hardware (devices for students and staff) to support digital learning. 7. **Educational technology (EdTech)**: The institution provides resources to staff, students and administrative staff to employ a wide range of pedagogical tools and software (including end-user software and central software applications) to support the organisation and delivery of face-to-face and digital teaching and learning. 8. **Guidelines**: User guides, supports and pathways for assistance of all technologies are developed and clearly communicated to staff and students.

Principles	Common quality indicators
	9. **Data protection**: The institution has policies and processes in place to ensure the data protection of all users of the digital education infrastructure provided by the institution.
	10. **IT maintenance and support staff**: The institution has sufficient maintenance and support staff that can help teaching staff and students (both on-campus and off campus) with technical difficulties in using or accessing the available digital infrastructure, as well as to ensure the overall maintenance, digital security and data privacy of all users of the education infrastructure provided by the institution.
	11. **Professional development of IT maintenance and support staff**: Professional development is available for staff managing the digital education infrastructure (with a specific focus on new and emerging technologies).
	12. **Monitoring**: The quality of the digital education infrastructure is monitored and adjusted, based on clear and measurable criteria, qualitative and quantitative data, and broad stakeholder engagement.

Source: Based on an analysis and selection of common indicators from ten quality frameworks (Annex C, Table 18).

4.2.1 Vision, mission and strategy for digitalisation and innovation

An EUA report focusing specifically on the role of strategy and organisational culture states that consideration should be given as to whether an institution develops a standalone or embedded strategy for digitalisation. There are advantages and disadvantages to both approaches, and there is limited evidence on whether one approach to strategy development leads to better outcomes than the other (EUA, 2022[100]). In discussing the components that need to be incorporated within an institutional strategy for digitalisation, the report proposes three key domains: vision, leadership and governance; people, community and stakeholders; and tools, spaces and resources. The report also argues that any strategy should explicitly address key questions on the "why?", "what?" and "how?" of digital higher education.

A major survey of 368 institutions from 48 countries in **Europe,** carried out by the EUA in 2020 (Gaebel et al., 2021[101]), found that 51% of HEIs were already considering digitally enhanced teaching and learning in their internal QA strategies. In 41% of HEIs, this was under development. This represents a significant increase compared with 2014, when the figures were 29% and 35% respectively. Moreover, the report found that three-quarters of the respondents had concrete plans to boost digital capacity beyond the pandemic. Notably, 95% of HEIs saw digitalisation as a strategic priority over the next five years. In the **US**, the seventh edition of the Changing Landscape of Online Education (CHLOE) report, which is based on survey responses from 331 chief online officers (COOs) from colleges and universities in the US, found that 96% of institutions had adopted quality standards for online courses and programmes. There is, however, a gap between the adoption of standards and the development of processes to support and evaluate the implementation and use of standards (Garrett et al., 2022[102]).

A centralised, collective or dispersed quality assurance system?

It is possible to make a distinction between three types of internal QA systems for open and distance education (ODE): centralised, collective and dispersed QA structures (Jung, 2022[4]). Centralised QA systems are "run by QA centres or senior managers who oversee the whole QA process, often to be seen in relatively large-scale ODE institutions". Collective QA systems are "operated by committees, councils, and/or boards which play distinctive roles in the different aspects or stages of QA". Dispersed QA systems "share the QA responsibility across various management units" (Jung, 2022, p. 7[4]). There is no evidence, as yet, that proves one QA system is more effective than another, but "a centralized system may be the most effective when an institution first introduces the QA system, and a dispersed or collective QA system might work better once the QA system is in place and a quality culture has had time to develop at institutional level" (Jung, 2022, p. 7[4]).

The importance of building stakeholder commitment and alignment

To build stakeholder alignment with the institutional vision and strategy for digitalisation, it is crucial for HEIs to publish quality manuals targeting key stakeholders across the institution (e.g. students, instructors, administrative and support staff). Such manuals list the "QA standards, best practices or sub-standards, and performance indicators for important QA areas; it lists QA procedures to follow and resources and actions needed for quality enhancement and improvement" (Jung, 2022, p. 11[4]). It should provide "resources and details about why and how to meet the stated criteria" (Lowenthal et al., 2021, p. 15[103]). While many HEIs have developed digitalisation strategies, few have developed specific quality manuals to support the implementation of institutional strategies for digitalisation. For example, a review of QA practices of ODE institutions in Commonwealth countries, carried out by Latchem (2016[104]), found that only 36% of surveyed institutions used QA manuals when carrying out their QA activities. In Spain, the **Open University of Catalonia** (OUC) has published an *Internal Quality Assurance System Manual* (OUC, 2017[105]), which lists the institution's QA processes, dimensions and standards, along with the responsibilities of different stakeholders in the institution. In September 2019, the **University of Nicosia's** (Cyprus)[6] e-Learning and Pedagogical Support Unit published a *Pedagogical Model for E-Learning* (University of Nicosia, 2019[106]). The model is based on the guidelines of the Cyprus Agency of Quality Assurance and Accreditation in Higher Education (CYQAA) (CYQAA, 2022[107]), the ENQA *Considerations for the Quality Assurance of E-Learning* (Huertas et al., 2018a[9]), the ESG (2015[5]) and EADTU's *E-xcellence* framework (EADTU, 2016[96]).

4.2.2 Organisational quality culture centred on digitalisation, innovation and collaboration

In addition to developing and communicating a centralised vision and guidance for digital education, it is important for HEIs to put in place structures that enable stakeholders to engage in discussions (i.e. horizontally) and share their views with management (i.e. vertically) about quality education and how it can be supported at institutional level. The ultimate goal of QA is "to move from the existing control framework to a *culture creation framework* and integrate QA activities into their institutional cultures and everyday practices" (Jung, 2022, p. 12[4]). A recent EUA report (EUA, 2022[100]) states that while organisational culture is difficult to define, "prevailing cultures are often difficult to change, which is why educational leaders need to pay attention to culture when planning or implementing major learning innovations" (EUA, 2022, p. 3[100]). Simunich et al. (2022[108]), in the context of a study on the implementation of the Quality Matters framework, conclude that top-down mandated approaches are almost doomed to fail. Adopting a mixed methods approach, the study sought to understand the "people, policies, and processes that enabled and supported institutional course design quality" (Simunich et al., 2022, p. 1[108]). Four key findings and recommendations emerged from the research:

- *People*. Firstly, choosing the right people to support and lead a quality initiative is crucial. Ideally, these are people at a senior level but who can serve as a bridge to bring different people together

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[6] Note by Türkiye:
The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Türkiye recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Türkiye shall preserve its position concerning the "Cyprus issue".

Note by all the European Union Member States of the OECD and the European Union:
The Republic of Cyprus is recognised by all members of the United Nations with the exception of Türkiye. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

across the institution. Importantly, this type of leadership role recognises that faculty opinions matter when it comes to designing, implementing and successfully sustaining a quality initiative (Simunich et al., 2022, p. 10[108]).

- ***Policies and practices***. Secondly, while the support of senior administrators is important, top-down mandated policies, QA requirements and compulsory professional development are less successful. The research found that such top-down models of QA implementation weakened faculty buy-in and participation. A mandated approach is reported to often miss key local factors in creating a culture shift toward quality. Not surprisingly, the research found that the support of multiple stakeholders was crucial to successful implementation, as everyone needs to be working together towards a common goal.

- ***Processes and resources***. Thirdly, processes and resources designed to enhance the quality of online and blended delivery should ease the burden on the faculty. As one participant reported: "quality as an expectation, not a requirement" (Simunich et al., 2022, p. 11[108]). This point illustrates that how QA is described within the institution makes a difference. It is also important that support for QA processes and the need for resources are written into relevant policies and the institution's strategic plan.

- ***Culture***. Finally, institutional culture shift starts with conversations that define quality, create shared goals and recognise the level of collective effort required to achieve strategic goals. Using the Quality Matters standards as a framework for structuring conversations about the purpose or appropriateness of ways of doing things, rather than merely a checklist to be completed, was another distinguishing feature of successful implementation. Moreover, it was found that "baby steps" ultimately led to noticeable shifts in the culture of the institution, rather than trying to implement major changes, especially when driven from the top-down.

To encourage teaching staff and management to collaborate on quality-related matters, some institutions organise regular informal meetings at institution, faculty or department level. For example, in Portugal the **University of Trás-os-Montes and Alto Douro** regularly organises informal meetings between management and instructional staff to discuss teaching and learning matters. These Pedagogical Meetings (*Tertúlias Pedagógicas*) are convened through an open invitation sent by email to all staff at the university, advertised in the university's events agenda and open to student participation (OECD, European Commission and DGES, 2022[109]). These fora provide opportunities for meaningful exchanges between teachers, students and management to jointly formulate quality goals for digital teaching and learning. Evidence shows, however, that such initiatives are rare among HEIs and often only attract a limited number of already highly motivated teaching staff. Engaging students and institutional leadership in such activities remains challenging for many HEIs (Tømte et al., 2019[110]). One of the reasons for this might be the competitive research environment in which teaching staff operate, which one the one hand may hinder their willingness to engage in regular discussions and practice-sharing, and on the other hand may limit the amount of time they have to engage in such activities (Van Den Besselaar, Hemlin and Van Der Weijden, 2012[111]), (Porter, 2019[112]).

4.2.3 Digital education infrastructure

A third key dimension that recurs in international quality frameworks is ensuring that all students, teachers and administrative staff have access to a high-quality digital education infrastructure that supports online and hybrid teaching, learning, research, engagement activities and institutional management. This includes tools and services that are not specific to the field of education and serve as the backbone for pedagogical development and innovation (Facer and Selwyn, 2021[113]), tools and resources more specific to education that can support quality and inclusive learning, teaching and assessment (Ifenthaler, 2012[114]), as well as maintenance and support staff to keep systems running and support students and teachers with technical and privacy issues when using the existing digital infrastructure (Đurek, Kadoic and Begičević Ređep, 2018[115]).

To ensure that their IT systems remain up-to-date and secure, some institutions have been carrying out regular market reviews and assessments of their digital education infrastructure. For example, in 2014, the **University of Auckland** in New Zealand undertook a major market review to inform the update of its virtual learning environment (VLE), following the dissatisfaction of students and staff with its in-house developed VLE CECILE. Following a review of four potential suppliers, the university chose Canvas as its new VLE provider (University of Auckland, 2015[116]). The **Open University** in the United Kingdom uses external contractors to review its VLE system every four years. One of these reviews, carried out in 2014, covered "four leading VLE systems deemed of relevance to the OU" (SeroHE, 2022[117]). However, institutional examples like these are rare, as HEIs typically do not have the (financial) capacity nor the expertise to carry out such specialised digital infrastructure reviews on a regular basis.

4.3 Implement: Implementation of quality assurance processes and supports for digital teaching and learning

A second key step for institutions to support the implementation of high-quality digital teaching and learning is to put in place QA policies and processes across three major domains: developing and assessing the quality of digital course content, design, delivery and assessment; supporting and incentivising staff professional development; and preparing and supporting students for digital learning. Based on an analysis of the indicators included in ten quality frameworks for digital higher education (see Annex C, Table 18), Table 7 presents seven common quality indicators related to supporting the implementation of QA processes and supports for digital teaching and learning. For each indicator, potential sub-indicators, policies and practices are listed.

Table 7. Common quality indicators for the implementation of quality assurance processes and supports for digital teaching and learning

Principles	Common quality indicators
4. Digital course content, design, delivery and assessment	13. **Digital course content and materials**: Policies and processes are in place to support instructors with the development of high-quality digital course content and materials. Possible sub-indicators, policies and practices to be considered under this indicator include: a. *Content*: Policies and processes are in place to ensure that the teaching materials represent up-to-date theory and practice in the discipline. b. *Academic integrity*: Digital courses model the academic integrity expected of learners by providing both source references and permissions for use of instructional materials. c. *Learning outcomes*: Digital curricula are designed to contribute both to the development of subject-specific educational outcomes and to the acquisition of transversal skills. Each course includes a clear statement of learning outcomes in terms of the knowledge, skills and competencies that are measured. Learning outcomes determine the methods and course content, as well as minimum technology requirements, and information is provided on how to achieve the learning outcomes. d. *Openness*: Digital content and OER are widely promoted and used and are selected to support the achievement of specific learning outcomes.[7]

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[7] A more detailed list of indicators for the QA of OER is presented in section 4.3.1, based on the quality model for OER developed by Mayrberger, Zawacki-Richter and Müskens (2018[123]).

Principles	Common quality indicators
	e. *Interactivity*: Digital materials are designed to allow for sufficient interactivity (student-to-content, student-to-student and student-to-teacher), encourage active engagement, and provide opportunities for students to regularly test and apply their knowledge, skills and competencies.
	f. *Autonomous learning*: Digital curricula include independent learning materials that support autonomous learning and are accompanied by regular feedback through self-assessment activities or tests.
	g. *Monitoring*: Course materials, including the intended learning outcomes, are reviewed by expert educators prior to first use, and then regularly reviewed, updated and improved using feedback from stakeholders. Special attention is paid to ensuring the quality of OER.
	14. **Digital course design**: Policies and processes are in place to support high-quality and uniform digital course design at institutional and faculty level. Possible sub-indicators, policies and practices to be considered under this indicator include: a. *Flexibility*: Flexibility is deliberately included in course design which is based on evidence or experience. Continuous quality improvement is deliberately embedded to enhance course flexibility. b. *Interactivity*: Interaction in the course is deliberately designed, informed by evidence or experience. Interactions are monitored, evaluated and changed based on data and feedback. c. *Structure*: Learning activities (both face-to-face and online) are deliberately selected, integrated and sequenced based on a design method or design principles. d. *Accessibility and usability*: Course navigation facilitates ease of use, as well as alternative means of access to multimedia content in formats that meet the needs of diverse learners. Special attention is paid to the application of Universal Design for Learning (UDL) principles in course design.[8] e. *Visual coherence*: Courses conform to guidelines on layout, presentation and visual identity and are as consistent as possible across the programme, faculty and institution.
	15. **Digital course delivery**: Policies and processes are in place to ensure instructors employ adapted delivery methods for digital courses. Possible sub-indicators, policies, and practices to consider under this indicator include: a. *Technical infrastructure and resources*: The technical infrastructure and resources used for course delivery are fit-for-purpose and support a variety of academic, social and administrative functions. b. *Digital skills*: Students' digital competencies are developed across the curriculum. c. *Practice-based learning*: Digital course materials and methods promote learning in real-life contexts. d. *Collaborative learning*: Staff and students are partners in the teaching and learning process. Collaboration and group work are facilitated in online learning settings. e. *Personalised and autonomous learning*: Personalised and autonomous learning are part of the digital learning experience to support the development of students' critical thinking and creativity skills. f. *Inclusive learning*: The different needs and backgrounds of all learners are considered by the instructor. Continuous quality improvement is deliberately embedded to improve inclusiveness in the course.

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[8] A more detailed list of indicators for the QA of course design based on UDL principles is presented in section 4.3.1, based on the UDL principles developed by CAST, a non-profit educational research and development organisation (CAST, 2018[125]).

Principles	Common quality indicators

	16. **Digital course assessment**: Policies and processes are in place to ensure instructors employ adapted assessment methods for digital courses.[9]
	
	Possible sub-indicators, policies and practices to be considered under this indicator include:
	
	   a. *Policies, structures and processes for quality assurance of e-assessment*: Policies and processes are in place to ensure e-assessment practices conform with ethical and legal considerations.
	
	   b. *Assessment of learning*: The e-assessment methods are varied, facilitate pedagogical innovation and rigorously assess the level of achievement of learning outcomes.
	
	   c. *Authenticity, transparency and authorship*: Appropriate measures are in place to prevent impersonation and/or plagiarism, and guarantee learner authentication and work authorship.
	
	   d. *Infrastructure and resources*: The institution utilises appropriate technologies that match the different e-assessment methods.
	
	   e. *Learner support*: All learners, especially those with special educational needs (SEND), are supported to acquire the necessary skills and resources to successfully engage in e-assessment.
	
	   f. *Teaching staff*: Teaching staff are skilled and well-supported in relation to the development of technological and pedagogical requirements and e-assessment methods.
	
	   g. *Learning analytics*: The institution has an information management system that enables agile, complete, and representative collection of data and indicators derived from all aspects related to e-assessment methodology, as well as authenticity and authorship technologies.
	
	   h. *Public information*: The institution clearly communicates policies and processes for e-assessment to students and staff.

5. Supporting and incentivising staff professional development	17. **Staff professional development**: Policies and processes are in place for the professional development of teaching and administrative staff to support the effective use of digital technologies and pedagogies.
	
	Possible sub-indicators, policies and practices to be considered under this indicator include:
	
	   a. *Framework*: A framework for the recruitment, induction, professional development, and promotion of teaching and administrative staff including digital and pedagogical competencies is part of the institution's digital education strategy.
	
	   b. *Comprehensiveness*: A variety of staff professional development opportunities is evident across the institution, including opportunities for technical skills and specific pedagogical skills development.
	
	   c. *Relevance and expertise*: The institution employs expertise in digital education to develop staff professional development programmes. Professional development programmes are in line with the latest technological developments and digital technologies used across the institution.
	
	   d. *Identification*: Processes are in place to identify staff professional development requirements at individual, team and institutional levels (e.g. through digital skills assessments or staff performance appraisals).

	18. **Incentives for staff engagement in professional development**: Policies and processes are in place to support and incentivise staff to engage in the professional development of their digital skills and practices. Possible sub-indicators, policies and practices to be considered under this indicator include:

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[9] The proposed e-assessment indicators are based on the *Framework for the Quality Assurance of e-Assessment*, which has been developed as part of the EU-funded TeSLA project (Adaptive Trust-based e-assessment System for Learning) (Mellar et al., 2018[136]).

Principles	Common quality indicators
	a. *Comprehensive support*: Staff across the institution have access to a wide range of supports for digital course design, delivery and assessment. This includes both technical support (e.g. technical helpdesk, administrative support or recording studio) and pedagogical support (e.g. online course designers).
	b. *Communication and promotion*: Staff professional development opportunities are clearly communicated and promoted among academic and administrative staff.
	c. *Experimentation*: Experimentation with new and emerging technologies is encouraged and resourced by the institution and supported by procedure.
	d. *Collaboration, networking and dissemination*: There are (digital) platforms and mechanisms for the exchange and dissemination of good practice based on experience and research on digital education.
	e. *Staff workload*: The institution ensures that issues related to staff workload, and any other implications for staff participation in professional development activity, are reflected in course and programme management.
	f. *Career incentives*: Engagement in staff professional development for digital learning contributes to career advancement and is promoted through career development incentives (e.g. digital competence or participation in staff professional development is included in staff appraisals; educational research and innovation in digital education are regarded as high-status activities).
6. Preparing and supporting students for digital learning	19. **Preparing and supporting students for digital learning**: Policies and processes are in place to prepare and support students for studying in fully online and hybrid study programmes.
	Possible sub-indicators, policies and practices to be considered under this indicator include:
	a. *Information, transparency and guidelines*: Students are provided with clear and up-to-date information on their courses, including learning and assessment methods, technology and skills requirements, and the expected learning outcomes. Guidelines of specific relevance to digital education include the provision of hardware, information on accessibility and how to participate in collaborative activities.
	b. *Framework*: A (self-assessment) framework to prepare and support students for digital learning is part of the institution's overall digital education strategy.
	c. *Variety of digital learning resources and supports*: Students have access to a wide variety of digital learning resources, including online library access, study skills development, a study advisor, opportunities for technical skills development and advice on course choices. They receive clear guidelines and training in using these resources. Specific attention is paid to the provision of resources and supports for mental health and well-being.
	d. *Relevance and expertise*: The institution involves staff specialised in digital education for the development of student support services for digital learning. Student support services are in line with the latest technological developments and digital technologies used across the institution.
	e. *Identification*: Processes are in place to identify the ongoing support needs of students (e.g. student feedback surveys, inclusion of student representatives in management meetings) and to identify students at risk of dropping out and in need of support in online and hybrid study programmes (e.g. early warning mechanisms, collection and analysis of learning analytics data from the LMS/VLE and student information system).
	f. *Monitoring*: Processes are in place to monitor the quality of support services and resources provided to students, both prior to and during the adoption process. The student support framework and services are adjusted based on the results of these reviews.

Source: Adapted from an analysis and selection of common indicators in ten quality frameworks (Annex C, Table 18).

4.3.1 Digital course content, design, delivery and assessment

Assuring the quality of digital course content

To improve the quality, diversity and interactivity of digital course content, an increasing number of HEIs has started collaborating with online platform providers to develop and integrate massive open online courses (MOOCs) and open educational resources (OER)[10] into their study programmes. To support the QA of MOOCs, *OpenupEd* – one of the largest networks of MOOC providers for higher education in Europe –has developed a list of quality standards for MOOCs (OpenupEd, 2022[118]). It has also developed a checklist to support HEIs with the quality enhancement of MOOCs and supports new partners joining the network to put in place quality enhancement. Network members can also apply to receive a quality label (OpenupEd, 2022[119]).

A global review of institutional practices for the QA of OER identified three institutional models: countries with (binding) top-down QA mechanisms for OER (e.g. **China**, **South Korea** and the **Republic of Türkiye**), countries where HEIs develop their own QA mechanisms for OER (e.g. **Canada**, **Spain** and **Japan**), and countries where HEIs have no QA processes for OER (Zawacki-Richter, Mü and Marín, 2022[120]). An example of an institution that has developed a QA model for OER is **TU Graz** in Austria, which "considers open educational resources as a basis for high-quality teaching and therefore supports the development and use of OER" (Ebner, Orr and Schön, 2022, p. 303[121]). The framework is structured around seven objectives/expectations, with associated output, outcome and impact indicators. The seven objectives are that OER supports: access to free knowledge and open exchange; open teaching and learning scenarios; collaboration between companies and the university; inclusion; good teaching of the university and its teachers; a sustainable quality assurance cycle for teaching; and copyright issues in teaching. Several OER quality models are being developed to support institutions with the development of quality standards for OER. An example is the European Commission-funded European Network for Catalysing Open Resources in Education (ENCORE+) (ENCORE+, 2021[122]), co-ordinated by the ICDE. As part of this project, stakeholders from several European HEIs are collecting and developing policies, practices, guidelines and resources to support the development of quality OERs. Another quality model for OER is that developed by Mayrberger, Zawacki-Richter and Müskens (2018[123]), presented in Table 8.

Table 8. Quality model for open educational resources (OER)

Pedagogical dimension		Technical dimension	
Content	**Instructional design**	**Accessibility**	**Usability**
Academic foundation; Target group orientation; Reusability of content	Alignment; Collaboration and interaction; Applicability; Student support; Assessment	CC-Licence; Accessibility for students with disabilities; Reliability and compatibility; Technical reusability	Structure, navigation and orientation; Design and readability; Interactivity

Source: Mayrberger, Zawacki-Richter and Müskens (2018[123]), *Qualitätsentwicklung von OER – Vorschlag zur Erstellung eines Qualitätssicherungsinstrumentes für OER am Beispiel der Hamburg Open Online University: Sonderband zum Fachmagazin Synergie [Quality development of OER - Proposal for the creation of a quality assurance tool for OER using the example of the Hamburg Open Online University: Special volume for the professional journal Synergie],* Hamburg University, Hamburg, p. 29, https://doi.org/10.25592/978.3.924330.67.5

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[10] Open Educational Resources (OER) are "learning, teaching and research materials in any format and medium that reside in the public domain or are under copyright that have been released under an open license, that permit no-cost access, re-use, re-purpose, adaptation and redistribution by others" (UNESCO, 2019[271]).

Quality and inclusive digital course design

While there are several models for digital course design, universal design for learning (UDL) is seen as perhaps one of the most important pedagogical principles that should underpin the development of any course, regardless of delivery mode, to support greater inclusion and equity in student outcomes (Lowenthal et al., 2021[103]), (Ehlers and Zhang, 2022[124]). Center for Applied Special Technology (CAST), a non-profit educational research and development organisation, has developed UDL guidelines (CAST, 2018[125]) that set out 31 indicators under three overarching quality domains: engagement, representation, and access and expression (see Table 9). These quality indicators are important to ensure learners can access the educational material and are able to show what they know in appropriate ways. The guidelines provide a useful framework for both programme managers and instructors to ensure quality at the course design level. However, as mentioned by Barquero (2022[126]), integrating all these considerations in the initial design of a course requires a lot of planning and preparation by teaching staff.

Table 9. Universal Design for Learning (UDL) guidelines

Domain	Engagement	Representation	Action and expression
Access	1. Optimise individual choice and autonomy 2. Optimise relevance, value and authenticity 3. Minimise threats and distractions	1. Offer ways of customising the display of information 2. Offer alternatives to auditory information 3. Offer alternatives to visual information	1. Vary the methods of response and navigation 2. Optimise access to tools and assistive technologies
Build	4. Heighten salience of goals and objectives 5. Vary demands and resources to optimise challenge 6. Foster collaboration and community 7. Increase mastery-oriented feedback	4. Clarify vocabulary and symbols 5. Clarify syntax and structure 6. Support decoding of text, mathematical notation and symbols 7. Promote understanding across languages 8. Illustrate through multiple media	3. Use multiple media for communication 4. Use multiple tools for construction and composition 5. Build fluencies with graduated levels of support for practice and performance
Internalise	8. Promote expectations and beliefs that optimise motivation 9. Facilitate personal coping skills and strategies 10. Develop self-assessment and reflection	9. Activate or supply background knowledge 10. Highlight patterns, critical features, big ideas and relationships 11. Guide information processing and visualisation 12. Maximise transfer and generalisation	6. Guide appropriate goal setting 7. Support planning and strategy development 8. Facilitate managing information and resources 9. Enhance capacity for monitoring progress
Expert learners are	**Purposeful and motivated**	**Resourceful and knowledgeable**	**Strategic and goal-directed**

Source: Adapted from CAST (2018[125]), *The UDL Guidelines*, Center for Applied Special Technology (CAST), Wakefield, MA, https://udlguidelines.cast.org/?utm_source=castsite&lutm_medium=web&utm_campaign=none&utm_content=aboutudl

Interactive and student-centred digital course delivery

A third critical dimension of student success in digital study programmes is ensuring active participation and interactivity in digital course delivery. Ensuring active participation of and interactivity with students is widely reported as one of the main challenges facing instructors when teaching online. According to Garrison et al. (2010[127]), any learning experience should seek to develop a "community of inquiry" between the instructor and learners. They argue that instructors, as they design and deliver their courses, should pay attention to fostering three types of "presence" in learners: social presence, teaching presence and cognitive presence. Social presence is "the ability of participants to identify with the community (e.g. course of study), communicate purposefully in a trusting environment and develop inter-personal relationships" (Swan, Garrison and Richardson, 2009, p. 352[128]). Teaching presence refers to the design and facilitation of activities that engage learners in meaningful activities (Anderson et al., 2001[129]). Cognitive presence refers to the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse (Garrison, Anderson and Archer, 2001[130]).

Trusted and authentic online assessment

Finally, a major challenge reported by institutions and instructors is how to ensure authentic and trusted online assessment, and in particular mitigating the risk of cheating during online assessment (Manoharan and Ye, 2020[131]). Managing this risk has two dimensions: prevention and enforcement (Lee-Post and Hapke, 2017[132]). Prevention measures include the redesign of examinations (OECD, 2020b[133]), for example, by structuring the examination as an open-book/open-web task (Manoharan and Ye, 2020[131]) (meaning that cheating is unlikely to generate an advantage) or the use of oral examinations. Another prevention mechanism implemented by HEIs in several OECD jurisdictions is the adoption of ethics and academic misconduct policies to make students aware of, committed and accountable to their responsibilities towards the institution (OECD, 2020b[133]). An example is **Athabasca University** in Canada, which has a dedicated webpage on *Student Academic Misconduct Policy*. Students who are caught in academic misconduct (which includes cheating) may receive a reduced grade, suspension or expulsion from the university (Athabasca University, 2018[134]).

Building confidence in the integrity of assessment and making students aware of their responsibilities is also likely to require enforcement measures. Enforcement has two dimensions: authentication (i.e. verifying the identity of the person taking the test) and proctoring (i.e. monitoring student conduct during the test) (Lee-Post and Hapke, 2017[132]). The former can be done using biometric methods (such as facial recognition, fingerprinting, iris recognition or voice recognition), possibly coupled with video-monitoring by webcam (Lee-Post and Hapke, 2017[132]). Online proctoring may use tools that prevent students' computers from accessing other applications and which record students during the examination (using the webcam and microphone) to detect suspicious events (such as the sound of voices or the student leaving their workstation). More sophisticated proctoring can be arranged by third-party proctoring specialists (Lee-Post and Hapke, 2017[132]), (OECD, 2020b[133]). **Delft Technical University** in the Netherlands has a three-step proctoring protocol to manage the risk of cheating in online environments. First, a technical test is conducted to check the functionality of the proctoring system. Next, the student's identity is verified through their personal device. Finally, the student is asked to make a 360-degree video of the environment in which they will complete the test (TU Delft, 2022[135]).

A *Framework for the Quality Assurance of e-Assessment* has been developed as part of the EU-funded TeSLA project (Adaptive Trust-based e-assessment System for Learning) (Mellar et al., 2018[136]) to support institutions and QA agencies working in the EHEA to evaluate the quality of their e-assessment practices. The framework consists of eight standards, accompanied by "indicators" and "minimum evidence" for the quality assurance of e-assessment, which are presented in Table 10. As part of the project, the consortium also developed an open-source e-assessment tool that can be integrated into institutions' VLEs, regardless of their underlying technology.

Table 10. TeSLA framework for the quality assurance of e-assessment

Quality domain	Standard	Example indicators
1. Policies, structures and processes for quality assurance of e-assessment	The institution has appropriate policies, structures and processes to ensure that e-assessment conforms with ethical and legal considerations and is embedded in the organisational culture and values. In addition, the proposal for the e-assessment is aligned with the pedagogical model and academic and legal regulations of the institution and ensures the constant achievement of its objectives.	The e-assessment system is aligned with the institution's educational objective. Quality assurance procedures and security measures are in place for external partners providing e-assessment systems or services.
2. Assessment of learning	E-assessment methods are varied, facilitate pedagogical innovation and rigorously assess the achievement of learning outcomes. They are designed to assure a timely and fair assessment of learning. As such, they are authentic, transparent and consistent with learning activities and resources. Digital assessment should also promote the participation of learners and adapt to their diversity, as well as that of educational models.	Stakeholders, in particular teaching staff and learners, are informed about the e-assessment methods and the criteria used for grading learners' work. E-assessment methods are consistently applied and allow learners to demonstrate the extent to which the intended learning outcomes have been achieved.
3. Authenticity, transparency and authorship	The development and implementation of the e-assessment include protective measures that guarantee learner authentication and work authorship. The e-assessment system is secure and fit-for-purpose.	The institution has an all-inclusive, fail-safe technology development plan, including learner authentication and anti-plagiarism technologies to guarantee the learner's identity and work authorship and procedures for data protection and privacy requirements.
4. Infrastructure and resources	The institution utilises appropriate technologies that support the learning expectations and enhance and expand learning opportunities.	The technical infrastructure and operating systems ensure sufficient coverage and alignment with the e-assessment methods. The technical infrastructure ensures e-assessment accessibility for learners with special educational needs or disabilities (SEND).
5. Learner support	Learners are aware of, have access to and use effective and well-resourced support services for counselling, orientation, tutoring and facilitation to increase retention and success. Learner support covers pedagogical, technological and administrative needs and is part of established institutional policies and strategies.	Procedures are in place to identify the support requirements of learners, including SEND learners. Feedback procedures are in place.
6. Teaching staff	Teaching staff are skilled and well-supported in relation to the development of technological and pedagogical requirements and e-assessment methods.	Procedures are in place to identify the support requirements of teaching staff. Teaching staff are trained and proficient in the use of digital learning technologies and e-assessment methods.

Quality domain	Standard	Example indicators
7. Learning analytics	The institution has an information management system that enables agile, complete and representative collection of data and indicators derived from all aspects related to e-assessment methodology and authenticity and authorship technologies.	The institution ensures effective management and the collection and dissemination of relevant information from/to stakeholders. The institution analyses relevant information for the effective management of the e-assessment.
8. Public information	The institution appropriately informs all stakeholders of e-assessment methods and resource requirements. Learners are made aware of the hardware requirements, learning resources technology and technical support provision.	Information is made publicly available on the e-assessment methods (criteria, regulations and procedures), the pedagogical model which supports them, minimum hardware requirements to make full use of the assessment system, and the institutional learning and technical support.

Source: Adapted from Foerster et al. (2019[137]), *D4.7 – Framework of e-assessment*, CORDIS, Brussels, https://cordis.europa.eu/project/id/688520/results

Finally, involving students and teachers in the development and regular review of online course design, delivery and assessment is widely recognised as an important practice to enhance course quality, as well as the overall student experience and learning outcomes (Ehlers and Zhang, 2022[124]). To engage students more actively in the design and revision of assessments, **Cardiff University** (United Kingdom) and the **University of Minho** (Portugal) are partnering in an Erasmus+ project to develop practical activities for *Enhancing Equity, Agency, and Transparency in Assessment Practices in Higher Education* (2016[138]), (EAT Erasmus, 2022[139]). An increasing number of HEIs, especially in the United States (e.g. **Arizona State University**), also employ a dedicated "online programme manager" or "digital campus architect" to oversee the QA practices specifically related to the design and review of digital courses and programmes (Lederman and D'Agostino, 2022[140]).

4.3.2 Supporting and incentivising staff professional development

Recruitment and appointment of academic and support staff

In most OECD jurisdictions, HEIs have a large degree of autonomy over how they recruit and appoint academic and support staff, especially at more junior levels. For example, according to the EUA's University Autonomy Scorecard, the recruitment of senior academic staff is carried out freely by HEIs in 18 out of 29 surveyed European jurisdictions.[11] For senior administrative staff this is the case in 21 jurisdictions[12] (EUA, 2021a[141]). However, few institutions have recruitment or promotion requirements that specifically relate to digital skills. To incentivise institutions to adopt such practices, QQI in **Ireland** has developed specific guidelines for the appointment, induction, training, professional development and appraisal of teaching and support staff as part of its guidelines for providers of blended learning programmes. The guidelines are as follows (QQI, 2018, pp. 9-10[58]):

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[11] Austria, Denmark, Estonia, Finland, Flanders, Hesse, Iceland, Lithuania, Luxembourg, The Netherlands, North Rhine-Westphalia, Norway, Serbia, Slovakia, Slovenia, Sweden, Switzerland, United Kingdom.

[12] Austria, Brandenburg, Estonia, Finland, Flanders, Wallonia, Hesse, Hungary, Iceland, Latvia, Lithuania, Luxembourg, The Netherlands, North Rhine-Westphalia, Norway, Poland, Slovakia, Slovenia, Sweden, Switzerland, United Kingdom.

Staff engaged to support online learners can either demonstrate previous experience of online provision or are provided with appropriate induction and training.

There is a planned approach to the appointment of (or access to) specialist staff to support the provider's blended learning strategy. For example, specialist staff with academic, technical or professional expertise in the pedagogy/assessment appropriate to online learning and in educational technology.

There is planned close collaboration between the academic and other support personnel and specialist staff, such as teams involved in designing learning technologies and other methodologies supporting online learning.

There is a planned approach to staff guidance of online learners on any open education resources referenced including any intended or unintended endorsement of such resources.

Supporting staff professional development and digital skills assessment

In an increasing number of OECD jurisdictions, HEIs are conducting systematic digital skills assessments of instructional staff. Based on a systematic literature review of digital competence assessment methods in higher education, Sillat, Tammets and Laanpere (2021[142]) found that quantitative self-assessments were the most common approach. They note, however, a "lack of qualitative research to accompany the results in analysing the reliability and validity of the instruments and digital competence assessment process" (Sillat, Tammets and Laanpere, 2021, p. 11[142]). They also underline the importance of any digital competence assessment and framework being based on validated and adaptable guidelines developed through a participatory design process. It is much less common for HEIs to carry out digital skills assessments of administrative and support staff, and specific frameworks providing an overview of the digital skills requirements for different staff profiles in HEIs are rare. An exception is the *Digital Capability Framework* developed by Jisc in the **United Kingdom**, which describes "the skills needed by staff from a wide range of academic, administrative and professional roles" (Jisc, 2022a[143]). Jisc has developed separate frameworks for seven "role profiles" that set out the specific digital capabilities associated with each profile. They are: higher education teachers, further education and skills teachers, researchers, librarians and information professionals, learning technologists, leaders, and learners.

Many HEIs have also been setting up institutionally-based staff professional development centres[13] (Chalmers and Gardiner, 2015[144]), (Parsons et al., 2012[145]). These centres aim to support instructors to improve and professionalise their teaching practice, including preparing for and adapting to technology-enhanced approaches. Based on interviews carried out in 2021 with experts in 30 European countries, a recent EUA report on *National Developments in Learning and Teaching in Europe* found that institutions in 28 countries[14] were organising continuous professional development (CPD) for their teaching staff, typically through a teaching and learning centre (Zhang, 2022, p. 36[146]). The study found that in the **Netherlands**, for example, all universities have teaching and learning centres that offer basic and senior teaching qualifications, as well as leadership development. In some countries (e.g. **Lithuania**, the **Netherlands**, **Norway**, **Sweden** and **Switzerland**), the research found that the teaching enhancement offer is often shared between HEIs, to the benefit of smaller institutions that either do not have the resources to run such centres or cannot cover all their training needs independently. In some systems, where institutions have a more decentralised management structure, such centres are operated by individual faculties. HEIs in some OECD countries (e.g. **United States**, **United Kingdom**) are at the forefront of running teaching and learning centres that focus specifically on digital competencies. Some of

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[13] Such centres exist, for example, in Ghent University, the University of Helsinki, Université Grenoble Alps, Ludwig Maximilian University of Munich, RWTH Aachen University, University of Hamburg, Delft University of Technology, Leiden University, Utrecht University, Universidad Autonoma de Madrid.

[14] Austria, Belgium (Flemish and French-speaking Communities), Croatia, Cyprus, Czech Republic, Denmark, Estonia, Germany, Greece, Finland, Georgia, Hungary, Iceland, Ireland, Italy, Kazakhstan, the Netherlands, Norway, Latvia, Lithuania, Poland, Portugal, Romania, Slovenia, Spain, Sweden, Switzerland, United Kingdom.

them have even established executive leadership posts and central units for digital transformation (Keune, 2022[147]), (Office of the Provost, 2022[148]).

To understand the impact of professional development on instructors' pedagogical practices, Zimmerman et al. (2020[149]) investigated the relationship between professional development, course design and course review in cases where Quality Matters™ (QM) was part of a HEI's quality management. The research reports that "courses with developers who had completed related professional development were more than twice as likely to meet standards in their initial review" (Zimmerman et al., 2020, p. 155[149]). Similarly, courses originally designed to meet QM standards were almost 1.5 times more likely to meet them in their initial review than courses that were not originally designed to meet QM standards. Evidence from institutional pre-review showed that courses were 1.3 times more likely to meet QM standards in their initial review than those that had not gone through the pre-review process. The positive impact of staff professional development on teachers and students is confirmed in research conducted by Chalmers and Gardiner (2015[144]).

Incentivising staff engagement in professional development and digital skills assessment

One of the main challenges facing HEIs is incentivising staff to use digital tools and engage in professional development. By common agreement among experts, one of the main reasons for this is the lower status of teaching compared to research (Blackmore and Kandiko, 2011[150]). Another reason is that digital course creation comes with a higher time commitment for production and reproduction compared with a traditional in-person course. According to some estimates, it takes three or more years for the time commitments associated with digital provision to become lower than those of in-person instruction (Gregory and Lodge, 2015[151]). In some OECD countries, HEIs have sought to incentivise staff to engage in professional development by improving the status of higher education teachers and the prestige of the higher education teaching profession. They have sought to achieve this by including the quality of teaching as a strategic priority for the institution, assigning explicit responsibility for fostering teacher quality to, for example, heads of departments, establishing a teaching and learning framework that reflects the values of the institution and creating annual awards that honour and recognise excellent teaching (Hénard and Roseweare, 2012[152]). Institutional recognition of teaching excellence is now common in most European HEIs. A 2017 survey of 78 HEIs across five European countries showed that these awards, designed to motivate educators to improve the quality of their teaching, can encourage innovation in teaching and raise awareness of the importance of improving teaching (Efimenko et al., 2018[153]). The **University of Manchester** in England (United Kingdom), for example, has an annual Teaching Excellence Award for academic, technical and professional support staff. One of the four categories in which the award is given is flexible learning and digital delivery. Winners are given a commemorative trophy, celebrated during an awards ceremony, offered professional development opportunities and invited to play a role in teaching and learning development at university level (The University of Manchester, 2022[154]). At the **University of Edinburgh** in Scotland (United Kingdom) and the **University of Canterbury** (New Zealand) 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[155]), (University of Canterbury, 2021[156]).

4.3.3 Preparing and supporting students for digital learning

The COVID-19 pandemic has taught educators that students want to be able to tailor their learning experience to their personal situation and preferences – especially adult learners, who are often combining work and family duties alongside their studies. In response to calls from students for greater flexibility, more and more HEIs have started experimenting with hybrid flexible or "HyFlex" education models. The term was coined by Brian Beatty at San Francisco State University (Beatty, 2019[157]) and can be defined as follows (Milman Natalie et al., 2020[158]):

The hybrid flexible, or HyFlex, course format is an instructional approach that combines face-to-face (F2F) and online learning. Each class session and learning activity is offered in-person, synchronously online, and asynchronously online. Students can decide – for each class or activity – how to participate. […] The HyFlex approach provides students autonomy, flexibility, and seamless engagement, no matter where, how, or when they engage in the course.

Examples of institutions that have adopted HyFlex course models are **Michigan State University**, which offers a statistics course in HyFlex format (Miller and Baham, 2018[159]), **Delgado Community College** in New Orleans, which has been working to introduce HyFlex into its curriculum (Samuel et al., 2020[160]), and **Columbia University** in the city of New York, where the Center for Teaching and Learning has developed a dedicated guidance and resources page on HyFlex education for instructors (Columbia University, 2022[161]). The main benefits of HyFlex education are that it can reduce barriers to enrolment and enable more students to achieve their educational goals. At the same time, it requires a high degree of self-directed learning on the part of learners to complete a highly flexible and very individual learning journey, and risks leading to study delays if students are inadequately prepared for digital learning.

Preparing students for digital learning

To prepare learners for digital learning, several HEIs have developed MOOCs to teach students how to learn online (e.g. **Athabasca University** (Athabasca University, 2022[162]) and **Dublin City University** (FutureLearn, 2022[163])). The **University of Tasmania** in Australia has developed an interactive online digital skills self-assessment tool for students (University of Tasmania, 2022[164]). The tool assesses seven key competencies for online learning included in a Digital Capabilities Framework for Students, developed by the institution in 2020 (see Table 11), and based on Jisc's digital capability framework (Jisc, 2022a[143]).

Supporting online mental health and enhancing the online learning experience

One competency which has been receiving the increased attention of HEIs in recent years is students' online mental health, well-being and resilience. An EUA report notes "safeguarding the health and wellbeing of staff and students alike" as one of the major new focus areas for institutional QA systems that emerged during the COVID-19 pandemic (Cirlan and Loukkola, 2021, p. 13[165]). Empirical studies involving **Italian** (Villani et al., 2021[166]), **Finnish** (Sarasjärvi et al., 2022[167]) and **German** higher education students (Holm-Hadulla et al., 2021[168]) confirm that mental health issues have become an increasing phenomenon among higher education students. As digital education is likely to remain part of higher education in future, it will be important for HEIs to pay specific attention to providing students not only with academic support, but also sufficient pastoral support and counselling.

In response to students' mental health issues and negative experiences with fully remote online education, a renewed emphasis on place-based education has emerged in HEIs across many OECD jurisdictions, which in many cases is a "reaction to the pandemic and the far from ideal experience of emergency remote teaching" (Ó Caollaí, 2022[169]). At the **University of Virginia-Wise** in the US, for example, the campus is planning to hire a "Vibrant-Campus-Community Coordinator", as the university believes that "the vast majority of the schools that are going to close in the next 10 years are going to be schools […] that pay no attention to the student-life experience" (Hatch, 2022[170]). By contrast, some HEIs have responded to the challenge of enhancing students' online learning experience by experimenting even further with the possibilities offered by digital technologies. For example, **Morehouse College** and **New Mexico State University** in the United States are planning to introduce virtual reality (VR) and augmented reality (AR) technology to create digital twin "metaversities"[15] (D'Agostino, 2022[171]), (Paykmian, 2022[172]).

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[15] A 'metaversity' is a "portmanteau of 'metaverse' and 'universities' […] an immersive virtual reality platform where remote faculty and students don VR headsets and meet synchronously as they would on a physical campus" (D'Agostino, 2022[171]).

Table 11. Digital capabilities framework for students, University of Tasmania, Australia

Competency	UTAS graduates are…
1. ICT proficiency and productivity	Active and self-directed, seeking out digital resources and participating fully in digital learning opportunities Self-managing, developing strategies for independent study that reduce digital distractions and enhance digital benefits Self-aware, using digital technologies to suit personal learning preferences and needs
2. Information, data and media literacies	Critical, selecting and evaluating resources according to the needs of the situation Enquiring, posing questions and looking for meaningful answers Analytical, seeing patterns in data and using information to solve problems
3. Digital creation, problem solving and innovation	Creative, using digital tools and media to create new artefacts and express new ideas Innovative, actively exploring new ways of using digital technologies Enterprising and entrepreneurial, considering how digital technologies could be used for social or economic
4. Digital communication, collaboration and participation	Highly networked Culturally and inter-culturally aware, respecting different norms and communicating effectively across cultures Generous, recognising and supporting the contributions of others
5. Digital learning and development	Scholarly, respecting values of open enquiry, open sharing and peer review in digital settings
6. Digital identity and well-being	Knowledgeable about being safe in digital spaces where the boundaries of public and private information may be unclear Respectful of others in digital spaces where distance and/or anonymity may encourage negative behaviours Socially and globally responsible, acting as a digital citizen and online advocate for their values

Source: University of Tasmania (2020[173]), *The Digital Capabilities Framework – The Future is Digital*, University of Tasmania, Tasmania, pp. 13-17, https://www.utas.edu.au/__data/assets/pdf_file/0020/1341164/Digital-Capabilities-Framework-May-2020.pdf

Collecting and using student feedback on the quality of digital learning

The student learning experience and students' opinions on the quality of teaching and learning have become an increasingly important focus for HEIs. In most OECD jurisdictions, HEIs now regularly collect student feedback through institution- or faculty-wide surveys and regular dialogue between HEI management, students and instructional staff (Brennan and Williams, 2004[174]). "Instant feedback" techniques using digital technologies are also emerging (Hénard and Roseweare, 2012[152]). At **Semmelweis University** in Hungary, for example, a QR code system has been developed to collect instant feedback from students after each lecture (see Box 8). The collection of student feedback on the quality of digital teaching and learning specifically, however, is a much more recent practice that has emerged primarily during the pandemic and is often not yet institutionalised.

Box 8. QR code-based student feedback system, Semmelweis University, Hungary

In 2020, Semmelweis University in Hungary introduced a QR code-based student feedback system in response to the high demand for immediate student feedback and educational development. The system allows instructors to gather immediate and anonymous student feedback at the end of each lecture to help them reflect on changes to be made for their next lesson. By scanning a QR code with their mobile phone at the end of lectures or practical seminars, the system asks students to answer a small number of fixed-response questions (nine questions for lectures, ten for practical seminars). Students also have the option not to answer questions or to expand on their answers. The system is run by the Centre for Educational Development, Methodology and Organisation and seeks to encourage a culture of continuous feedback and collaboration between students and teachers and support the overall quality enhancement of teaching and learning at the university.

Source: Kiss (2022[175]), "QR code system helps student feedback on teaching at Semmelweis University", *Semmelweis News*, https://semmelweis.hu/english/2022/01/qr-code-system-helps-student-feedback-on-teaching-at-semmelweis-university/

4.4 Monitor: Feedback and performance monitoring of digital teaching and learning quality

The third step in the PDCA-cycle consists of monitoring and collecting feedback on the quality of existing policies and practices for the QA of digital education. QA is, in effect, "a cyclical process in which an institution either as a single entity or as a summation of individual units undertakes self-evaluation, undergoes internal review, and seeks external review and (re)accreditation" (Jung, 2022, p. 10[4]). Digitalisation offers many opportunities to improve the quality, efficiency and inclusiveness of the monitoring and feedback practices, with learning analytics data and qualitative stakeholder feedback being seen as increasingly important data sources to strengthen the evidence base of institutions. Based on an analysis of the indicators included in ten quality frameworks for digital higher education (see Annex C, Table 18), Table 12 presents six common quality indicators related to the monitoring and continuous improvement of digital teaching and learning quality.

Table 12. Common quality indicators for feedback and performance monitoring of digital teaching and learning quality

Principles	Common quality indicators
7. Monitoring the quality of digital teaching and learning	20. **Monitoring and feedback collection**: Policies and practices exist to collect feedback and monitor the quality of digital learning, and these are integrated into existing institution- or faculty-wide monitoring practices.
	21. **Broad stakeholder involvement**: Feedback is sought from all relevant stakeholders across the institution (e.g. students, instructors, administrative staff, and IT support and maintenance staff) as well as from external stakeholders (e.g. employers, alumni, digital education experts).
	22. **Transparency**: Outcomes are used and widely reported to management, instructors and students.
	23. **External review and benchmarking**: The institution engages in external review and benchmarking of its digital practices against national, international or sector-wide standards or benchmarks.

8. Strengthening feedback and monitoring practices	24. **Digitalisation of review processes**: The institution considers the potential offered by digital technologies (including learning analytics) to improve the quality, regularity and diversity of its monitoring and data collection methods.
	25. **Variety of data collection methods**: A variety of quantitative (e.g. stakeholder satisfaction surveys, analysis of administrative and learning analytics data) and qualitative (e.g. interviews, focus groups) data collection methods is used to involve as many stakeholders as possible across the institution.

Source: Based on an analysis and selection of common indicators in ten quality frameworks (Annex C, Table 18).

4.4.1 Monitoring the quality of digital teaching and learning

Student and staff feedback surveys of digital learning quality

An increasing number of HEIs across the OECD has started to carry out quality reviews of digital provision, partly in response to the COVID-19 pandemic. A common approach has been the administration of institution- or faculty-wide student and staff surveys. An example is **Utrecht University** in the Netherlands, which administered an institution-wide survey to collect students' views and experiences of distance learning during the first months of the pandemic (Kirschner et al., 2020[176]).

Institutional self-assessment of digital practices

Some HEIs have also started to carry out more comprehensive self-assessments of their digital provision, independent from external QA procedures. In April 2021, for example, the Quality Enhancement Unit at the **University College Cork** (UCC) in Ireland completed a thematic quality review of the organisation on *Teaching and Assessing with Technology* (University College Cork, 2021[177]). Following the ESG (ENQA, 2015[5]) quality review model, an external expert panel was appointed to review documentation prepared by UCC and carry out a virtual site visit to the institution. The analysis identified existing good practice worth disseminating in the institution, as well as recommendations on how best to organise and manage digital teaching and learning. Based on the report, an action plan was developed to implement the panel's recommendations. **Dublin City University** (DCU) also carried out a similar review (see Box 9).

Box 9. Self-evaluation of digital learning at Dublin City University, Ireland

In 2020, DCU carried out a comprehensive thematic self-evaluation of digital learning across the university. The Steering Group carrying out the review utilised, where possible, existing sources of data and analysis to inform its self-evaluation. This included strategic planning documentation, existing student and staff survey results, and VLE data. To supplement existing materials, feedback was also invited from staff and students through a number of surveys and focus groups. Additionally, the ACODE benchmarking framework (Sankey and Padró, 2016[95]) was completed through a series of workshops with input from a wider group of academic and professional staff. The self-assessment report was then used to form the basis of an external quality review undertaken by a team of selected experts in December 2020. Based on recommendations of the external Peer Review Group Report (Dublin City University, 2020[178]), DCU adopted a set of principles for online and blended delivery, based on the ENQA (2018[179]) considerations, and revised its proposal templates for both new and revised programmes accordingly.

Source: Dublin City University (2020[178]), *Peer review group report for the thematic review of digital learning*, Dublin City University, Dublin, https://www.dcu.ie/sites/default/files/inline-files/prg-report-final-09-02-21.pdf

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4.4.2 Strengthening feedback and monitoring practices

External review of digital learning

So far, only a limited number of QA agencies has adopted standards and processes for the QA of digital higher education. Some HEIs dedicated to improving the quality of their digital provision have sought support from external professional organisations, networks and international bodies active in the field of digital education to review the quality of their digital provision. In the **United States** especially, where institutions are heavily reliant on tuition fees for funding, HEIs have sought to increase student numbers and retention by expanding their fully online and hybrid course offer and increasing its quality by contracting professional bodies such as Quality Matters™ or the Online Learning Consortium (OLC) to carry out external reviews of their digital course offerings and internal QA systems. In August 2022, 181 US-based HEIs were listed as "full members" of Quality Matters™ (Quality Matters, 2022[180]). In **Europe**, the European Association of Distance Teaching Universities (EADTU) has led external reviews of individual programmes and courses at a small number of (mainly open) HEIs in 13 countries, using the E-xcellence framework (EADTU, 2016[96]). An even smaller number of institutions has engaged in collaborative benchmarking exercises of their digital provision with other institutions. An example is the Distance Learning Benchmarking Club, which was set up at the initiative of the **University of Leicester** and involved institutions from Australia, New Zealand, Sweden, Canada, and the United Kingdom. Using the Pick&Mix framework developed by Maltic Media, the institutions identified 17 critical success factors to be used in the benchmarking exercise, which was led by a team of external reviewers (Bacsich, 2011[181]).

Using learning analytics to enhance the effectiveness of quality assurance

Institutions are also making increased use of digital technologies in their institutional monitoring and feedback collection practices. In this context, Ossianilsson et al. (2015[6]) make the following seminal point:

> *The overarching paradox is that online and distance education systems with their digital content and the persistent record of online transactions provide a rich source of evidence to enable quality assurance and audit processes. If open and distance learning were the current dominant mode of Higher Education and lecture-based education the innovation, the challenge would lie in how to quality assure a form of education in which interactions at the core of the system were ephemeral, highly dependent on personal interpretation by the teacher and student and seldom directly monitored (Ossiannilsson et al., 2015, p. 16[6]).*

In this context, learning analytics data generated through the learning management system/virtual learning environment (LMS/VLE) is a particularly promising avenue for HEIs to strengthen their quantitative evidence base. The Society for Research in Learning Analytics (SoLAR) defines learning analytics as "the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimising learning and the environments in which it occurs" (SoLAR, 2022[182]). Triangulated with survey and administrative data, learning analytics data "can generate rich insights into student engagement in learning and can be used to support student success." (OECD, 2021b, p. 13[183]). Based on a systematic literature review of 357 articles, Hellas et al. (2018[184]) identified five potential data source categories to predict academic performance: demographic, personality, academic, behavioural and institutional data. Despite evidence that learning analytics has the potential to improve learning support and teaching,[16] most institutions only use one, or at most two, data sources (Hellas et al., 2018[184]). The take up of learning analytics in European higher education also remains relatively low. It is mainly seen by HEI managers as a tool for teaching management, with the consequence that its potential to improve learning is largely unrealised (Tsai et al., 2020[185]), (Viberg et al., 2018[186]).

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[16] For example, **Manchester Metropolitan University** was able to increase its student satisfaction by 9% due to analysing students' requirements with learning analytics and **Nottingham Trent University** uses learning analytics to identify students at risk of failing (Hernández-de-Menéndez et al., 2022[187]).

Institutions such as **Georgia State University** and **Arizona State University** in the United States have been at the forefront of using learning analytics data to strengthen student support and performance (Hernández-de-Menéndez et al., 2022[187]). In the United Kingdom and Australia, several institutions have set up dedicated learning analytics units to support faculty staff and instructors with the collection and analysis of student performance data. Examples of such learning analytics units can be found at the **University of Adelaide** and **Monash University** in Australia (University of Adelaide, 2022[188]), (Monash University, 2022[189]) and the **Open University** in the United Kingdom (OU, 2022[190]). In this context, ethical and privacy issues surrounding the collection, use and storage of personal data are also an important consideration for institutions (OECD, 2021b, p. 13[183]), (Hernández-de-Menéndez et al., 2022[187]). In response to this, many institutions have adopted ethics and data privacy standards. An example is the Open University's *Policy on the Ethical Use of Student Data for Learning Analytics* (OU, 2014[191]), developed by the institution's learning analytics team in September 2014.

The importance of qualitative stakeholder feedback

In addition to strengthening quantitative data collection practices through learning analytics, literature also underlines the importance of qualitative stakeholder feedback, as qualitative research methods can help institutions understand the "context and illuminate the 'why' behind patterns encountered in institutional assessment" (Sillat, Tammets and Laanpere, 2021, p. 11[142]). A qualitative evaluation checklist developed by Patton (2018[192]) notes that interviews, focus groups and observations can yield in-depth responses on stakeholders' experiences, perceptions, opinions and feelings. At **Budapest Metropolitan University of Applied Sciences (METU)** in Hungary, for example, English-medium instruction (EMI) classes at the Institute of Foreign Languages undergo regular observations by the Centre for Learning and Teaching. During the pandemic, these observations were carried out virtually. The institution also uses student feedback from counselling and student support services to inform its QA practices (METU, 2021[193]).

5 Supporting institutions to strengthen the quality of digital higher education

This section describes how public authorities are supporting HEIs to enhance the quality of their digital provision. It covers four main areas of support for HEIs: the development of institutional strategies for digitalisation and QA; the development, maintenance and effective use of digital education infrastructure; staff professional development; and feedback and monitoring processes.

5.1 Key policy levers to support the quality enhancement of digital higher education

In addition to developing adapted external QA systems for digital higher education, public authorities have a key role to play in providing wider systemic support to HEIs for the quality enhancement of their digital provision. Building on the four "phases of action" identified as part of the OECD project *Supporting the Digital Transformation of Higher Education in Hungary* (i.e. setting the direction, building the foundation, developing the processes and delivering benefits to users) (OECD, 2021b, p. 48[183]), this section proposes four key policy levers that governments can consider as they seek to develop institutional supports for the quality enhancement of digital higher education:

- *Strategy setting and guidance.* The development of a national strategy, advice and guidelines for institutional digitalisation, innovation and QA can provide institutions with "broad objectives against which they can monitor progress" (OECD, 2021b, p. 49[183]).

- *Financial support and incentives* This consists of "providing and funding the infrastructure necessary to implement the strategy" (OECD, 2021b, p. 48[183]).

- *Stakeholder capacity building and collaboration*. Supporting higher education staff and students to acquire the necessary digital skills, tools and resources to access and engage in quality digital learning.

- *Performance monitoring and evidence collection.* Collecting data, feedback and best practice from students, staff and institutions on the quality and QA of digital education, to inform institutional decision-making and promote benchmarking against clear and measurable national targets and best practice.

As they seek to develop actions under these four policy levers, policymakers should carefully consider which lever is best suited to support which quality principle, as well as which actor in the system is best placed to provide the support. In a recent EUA report on *National Developments in Learning and Teaching in Europe,* Zhang (2022[146]) notes that institutional supports for teaching and learning is typically offered by a range of different organisations operating at a national or regional level, including QA agencies, foundations, sectoral associations, the National Rectors' Conference, or National Research and Education

Networks (NRENs).[17] It is important to build a common vision among these different national actors and clearly define their responsibilities to avoid duplication and ensure the efficient use of public resources. As discussed in this section, some OECD jurisdictions have established a publicly funded national centre, specifically dedicated to supporting HEIs with the enhancement of their teaching and learning practices. However, the EUA found that, in Europe, so far only four countries (**Germany**, **Ireland**, **Norway** and the **United Kingdom**) have set up such a centre (Zhang, 2022[146]).

Co-ordination is also important to avoid conflicts of interest and protect the academic integrity and autonomy of HEIs. For example, while the responsibility for the formulation and monitoring of national quality standards for digital higher education may reside with governments and/or QA agencies, HEIs should be able to independently develop their own strategies and QA systems, supported by independent expert organisations and opportunities for sectoral collaboration and peer learning. Table 13 below provides a framework to support national policymakers to map, analyse and design their institutional support landscape for digital teaching and learning. It is structured around three key questions:

- *What* are the key areas in which HEIs require support? The eight quality principles discussed in section 3 of this report can be grouped under four main focus areas: Policies (quality principles 1 and 2), Resources (quality principles 3 and 4), People (quality principles 6 and 7) and Processes (quality principles 7 and 8). The following sections will discuss in greater detail international trends and examples of best practice to support the quality enhancement of institutional Policies, Resources, People and Processes for digital higher education.

- *How* can public authorities support the quality enhancement of institutional Policies, Resources, People and Processes? Four key policy levers are proposed: strategy setting and guidance; financial support and incentives; stakeholder capacity building and collaboration; and national performance monitoring and evidence collection.

- *Who* are the actors that can play a role in providing these supports? Depending on the history and political tradition of each higher education system, a wide range of actors can be mobilised to support institutions, including: governments, QA agencies, NRENs, the National Rectors' Conference, sectoral associations, and national statistics offices.

5.2 Policies: Supporting the development of institutional digitalisation and quality assurance strategies

A first key area in which jurisdictions have been providing support to HEIs is their development of institutional strategies for digitalisation and QA. Because of the autonomy of HEIs in most OECD jurisdictions (de Boer and Huisman, 2020[194]), (Kupriyanova, Bennetot Pruvot and Estermann, 2020[195]), governments have typically tried to encourage institutions to develop strategies for digitalisation and QA by providing them with national guidelines and targets included in government strategies for higher education and/or digitalisation or national standards for digital education developed by QA agencies. In addition to governments and QA agencies, several (publicly funded) sectoral or regional organisations have been active in the development of quality standards, guidelines and toolkits for the QA of digital higher education. Several studies show that the successful implementation of any national strategy or guidance for education – regardless of whether it focuses on digitalisation or QA – depends heavily on stakeholder engagement in its initial design and implementation. Piloting is also highlighted as a key policy lever to support broad stakeholder ownership and commitment around national strategies and standards (Volungevičienė et al., 2021[14]), (Looney et al., 2022[196]).

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[17] NRENs are specialised internet service providers dedicated to supporting the needs of the research and education communities within a country. While they are known for supporting a high-speed backbone network, they also have a mandate to provide seamless and secure access to digital education resources (European Commission, 2022a[269]).

Table 13. Policy levers to support the quality enhancement of digital teaching and learning in higher education

Government co-ordination and support for the institutional quality enhancement of digital teaching and learning in higher education

What?	Policies	Resources	People	Processes	Implementation
How?	Strategy setting and guidance	Financial support and incentives	Stakeholder capacity building and collaboration	Performance monitoring and evidence collection	Who?
1. Vision, mission and strategy for digitalisation and innovation	✓				Government, QA agency, sectoral associations, NREN, national centre for teaching and learning
2. Organisational quality culture centred on digitalisation, innovation and collaboration	✓				Government, national centre for teaching and learning, NREN, QA agency, Rectors' Conference
3. Digital education infrastructure		✓			Government, NREN, international funds
4. Digital course content, design, delivery and assessment		✓			National centre for teaching and learning, national research centre, sectoral associations
5. Supporting and incentivising staff professional development			✓		National centre for teaching and learning, Rectors' Conference, sectoral associations
6. Preparing and supporting students for digital learning			✓		School education system (development of digital skills), national student union
7. Monitoring the quality of digital teaching and learning				✓	National statistics office, sectoral associations, national centre for teaching and learning, national research institute, QA agency, NREN
8. Strengthening feedback and monitoring practices				✓	National centre for teaching and learning, QA agency, NREN

5.2.1 National steering for the development of institutional digitalisation strategies

According to a 2018 report on the implementation of the Bologna Process in European higher education, 38 out of 50 European jurisdictions have a national strategy or policy on the use of new technology in teaching or learning. However, few have created a strategy specifically for higher education (e.g. **Italy**, **Germany** and the **Netherlands**). In most cases, higher education is part of a broader national education strategy (e.g. **Hungary**) or included in a digital society strategy (e.g. the **United Kingdom**, **Luxembourg**, **Sweden**) (Eurydice/EACEA/EC, 2018[197]). Similar evidence from a review of strategies in OECD countries shows that, as of 2020, half of OECD countries had published a digital education strategy (van der Vlies, 2020[198]). Where such strategies exist, they seek to carefully respect the tradition of HEI autonomy, as is the case in **Norway**'s *Strategy for the Digital Transformation of Higher Education 2021-2025* (Norwegian Minsitry of Research and Higher Education, 2021[199]) and the focus on higher education in **Denmark**'s *National Digitalisation Strategy* (Danish Ministry of Industry, Business and Financial Affairs, 2018[200]). In some jurisdictions, strategies and guidelines have been developed to support the implementation of more specific quality principles, either as standalone strategies or embedded in wider digitalisation strategies. In **Austria** and **Germany**, for example, the governments have issued recommendations and strategies to support the integration of open educational resources (OER) in higher education (Ebner et al., 2016[201]), (BMBF, 2022[202]). In **Canada** , the province of British Columbia's draft *National Strategy for Digital Learning* includes, among others, digital ethics, literacy and accessibility standards and guidelines (Digital Learning Advisory Committee, 2022[28]).

5.2.2 Guidelines and toolkits to inform the development of institutional quality assurance strategies and practices

In addition to national or regional governments, in many jurisdictions a variety of (publicly funded) national and sectoral organisations have developed standards and guidelines to support institutions to enhance their QA policies and practices for digital education. In **Hungary**, for example, Tempus Public Foundation has led a consortium of HEIs from five different countries to develop a toolkit aimed at supporting institutions to develop staff performance assessments (PROFFORMANCE, 2022[203]). Similarly, in **Germany** the Leibniz Institute for Knowledge Media has developed a Digital Benchmarking Toolkit in collaboration with several German universities (Leibniz Institute for Knowledge Media, 2022[204]). In the **United Kingdom**, Jisc has developed a digital capabilities framework for organisations (Jisc, 2017[205]). In **Norway** and **New Zealand**, the Standing Quality Committee of Flexible Education Norway (FuN) and Ako Aotearoa have produced guidelines to support institutions with the development of QA practices for digital higher education (Flexible Education Norway, 2018a[42]), (Coolbear, 2014[41]). In **Ireland**, the National Forum for the Enhancement of Teaching and Learning has published a *Guide to Developing Enabling Policies for Digital and Open Teaching and Learning* (National Forum for the Enhancement of Teaching and Learning, 2021a[206]).

5.3 Resources: Supporting the development, maintenance and effective use of digital education technology

A second key area in which institutions require support is the development, maintenance and effective use of digital infrastructure and technologies. Financial assistance from governments is a key policy lever that has been used to support institutions in this area, as several studies have indicated a need for additional financial resources to support the implementation of digital learning strategies (EUA, 2021b[207]). One study estimates that the provision of quality and equitable digital education requires almost doubling the human and financial resources of institutions (EDUCAUSE, 2021[208]). The two most important investment areas for institutions are the establishment of a high-quality digital education infrastructure and the recruitment of specialist pedagogical and technological support staff (e.g. online course designers, IT support and maintenance staff, learning analytics experts and statisticians, legal and ethical compliance staff, etc.).

The lack of financial and human resources, as well as the rapidly developing EdTech market,[18] can make the regular review and update of digital education infrastructure a daunting task for HEIs – especially smaller ones. The purchase of new digital tools, as well as ensuring their maintenance and interoperability with existing systems, is also very costly and often beyond the remit and expertise of individual HEIs. For this reason, in many systems NRENs and sectoral stakeholder organisations have started to play an increasingly important role in supporting institutions to make informed investment decisions, facilitating the joint purchase of digital technologies and providing central network hosting and maintenance services. They have also been active in developing specific guidelines and training for higher education instructors and IT support staff on how to effectively use digital technologies.

5.3.1 Financial supports and incentives for investment in digital education infrastructure

In OECD jurisdictions, on average two-thirds (66%) of HEIs' revenue comes from public funding sources (OECD, 2021[209]). Governments can therefore play a key role in steering the investment decisions of HEIs to expand and enhance the quality of their digital provision by adapting revenue models and funding

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[18] Allied Market Research estimates the total value of the e-learning market to be USD 197 billion in 2020, reaching USD 840 11 billion by 2030, with a compound annual growth rate of 17.5% from 2021 to 2030 (Allied Market Research, 2020[268]).

sources to digital education. Evidence from OECD countries shows that the most efficient way to support equity in education systems is through striking a balance between adapting core allocation funding and targeted funding programmes (OECD, 2021[210]).

An increasing number of smaller and medium-sized jurisdictions is using institutional performance agreements as a steering and accountability tool for publicly funded institutions in addition to making investments in the "digital backbone" at national level (i.e. ensuring strong on-campus and off-campus network connectivity) and boosting HEIs' central operating budgets to enable them to purchase digital devices and equipment in line with the specific needs of their students, instructors and programme offerings. In some systems, this has led institutions to adopt clear goals or targets related to improving the quality of their digital teaching and learning offer. In the **Netherlands**, for example, the government signed a sector agreement with all publicly funded HEIs in 2018 (Rijksoverheid, 2018[211]). In this agreement, the government and higher education sector have agreed on six priority themes for their 2019-24 performance agreements (*kwaliteitsafspraken*). Under priority 1 (Educational infrastructure) and priority 2 (Professional development of educators), the **Open University** of the Netherlands has set specific digitalisation targets (Open Universiteit, 2019[212]). In **Austria**, the latest rounds of institutional performance agreements (*Leistungsvereinbarungen*) include digitalisation as one of a limited number of priorities. The agreements for 2022 to 2024 aim to achieve significant expansion and development of digital learning (BMBWF, 2022[213]). Some systems have also made targeted funding available for institutions to hire professional organisations to review their digital provision. An example is **New Zealand**, where funding from Ako Aotearoa (via two major grants) and, later, the Tertiary Education Commission (one grant) supported the development of the *E-Learning Maturity Model* (eMM). The project included the deployment of the methodology at a range of tertiary education institutions in New Zealand (Marshall, 2012[214]).

5.3.2 Supporting the maintenance and effective use of digital infrastructure

In several OECD jurisdictions, NRENs play an important role in supporting HEIs to make informed choices on digital education technology, share resources for its purchase and maintenance, and support staff to use it effectively. In **Lithuania** and **Croatia**, for example, higher education consortia and NRENs provide centralised hosting services such as Zoom and Moodle on top of providing central network connectivity and maintenance (LieDM, 2022[215]), (CARNET, 2022[216]). In the **Netherlands**, SURF (*Samenwerkende Universitaire RekenFaciliteiten* – Collaborating Higher Education Calculation Facilities) uses a combination of peer learning activities and expert advice to guide the digital infrastructure choices of over 100 member institutions (SURF, 2022a[217]). In the **United Kingdom**, APUC (Advanced Procurement for Universities and Colleges) is a joint procurement service for **Scotland's** universities and colleges (APUC, 2022[218]). It is one of the eight procurement consortia (six regional and two national) in UK higher education. Together they created UKUPC, a partnership to support collaborative procurement in higher and further education in the United Kingdom (UKUPC, 2022[219]). Jisc's *Senior Managers' Guide to Learning Analytics* (Jisc, 2020a[220]) lists six key considerations for the effective implementation of learning analytics[19] and five areas for assessing institutional readiness for learning analytics (see Table 14).

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[19] Leadership from senior management and ongoing commitment; strategic alignment and a vision for the project with a clear and concise project plan; adequately funded project management; availability of IT/registry personnel; legal and ethical issues handled through consultation and policy development; and intervention policy to ensure effective use of analytics by appropriate staff.

Table 14. Framework for assessing institutional readiness for learning analytics

Domain	Key considerations
Culture and vision	The institutional strategy puts a strong emphasis on providing the best possible learning experience. Learning analytics is seen not as an end in itself but as a tool to help achieve institutional priorities such as improved retention, progression, achievement and student support.
Senior management sponsorship	The senior management of the institution approves and promotes a move towards more data informed decision-making processes both generally and more specifically in the area of teaching and learning. Ideally the senior sponsor will be someone at executive level.
Technology and data sources	The institution has a student record system (SRS), formatted according to Jisc's Unified Data Definitions (UDD) and virtual learning environment (VLE) with data transferred using Jisc's xAPI recipes. The institution uses both descriptive analytics, which can provide insight into a student's learning activities, as well as predictive analytics, which predict their future academic performance.
Policy framework	Learning analytics policies fit existing policies in areas such as teaching and learning, student support and IT. Specific new policies in areas relating to the ethical and legal handling of student data are adopted.
Staff capabilities and capacity	Learning analytics tools are made available to all staff across the institution. IT/SRS staff are supported to develop specific expertise in integrating existing data sources. Institutions have staff with expertise in analytics. Professional development is provided for staff involved in using learning analytics, for example through personal tutoring or as part of existing staff professional development programmes.

Source: Adapted from Jisc (2020a[220]), *Senior managers' guide to learning analytics*, Jisc, https://repository.jisc.ac.uk/7782/1/senior-managers-guide-to-learning-analytics.pdf

5.4 People: Supporting staff professional development for quality digital teaching and learning

A third key area of institutional support relates to the professional development of instructors to equip them with the skills needed to provide high-quality digital instruction and online student support. In many jurisdictions, there is a balance between the development of a more limited set of centralised guidelines and regulations on how institutions should organise staff professional development, and the provision of a variety of opportunities for staff to engage in peer learning, collaboration and the joint development and sharing of high-quality digital education content and practices.

5.4.1 Introduction of regulation on staff professional development

To incentivise institutions to establish staff professional development programmes, some OECD jurisdictions have introduced professional development as a national requirement for institutions and instructors. In Europe, such regulation exists in eight systems: **Denmark**, **Estonia**, **France**, **Georgia**, **Kazakhstan**, **Latvia**, **Lithuania**, and **Norway** (Zhang, 2022, p. 30[146]). In **France**, for example, since 2018, it has been mandatory for all HEI staff to undergo pedagogical training. To support institutions in the development of such training programmes, the French Ministry in charge of higher education launched a

teacher training massive open online course (MOOC) in 2017. Over time, the MOOC has evolved to include additional themes, such as competence-based teaching and digital learning (FUN, 2022a[221]). While it is not mandatory for instructors to complete the MOOC, it has served as an important incentive for HEIs to set up staff professional development centres. Several of these centres have based their work on the topics covered in the MOOC (Zhang, 2022[146]).

In most systems, however, moves towards mandating training or professional development for higher educators are likely to fail, as academics often enjoy a large degree of autonomy (Watson, 2007[222]), take part in advanced training in their field of specialisation (Eurydice/EACEA/EC, 2017[223]) and already combine a large number of teaching, research and societal engagement responsibilities. In **Sweden**, for example, following the introduction of national regulation requiring all higher education staff to undertake professional development, almost all HEIs established teaching and learning centres between 2003 and 2008. Since 2011, however, more autonomy was granted to HEIs and the teaching enhancement obligation was dropped. Nowadays, most HEIs require instructors to undertake at least five weeks (or 7.5 ECTS credits' worth) of professional development courses (Zhang, 2022, p. 35[146]). In the **Netherlands**, the Universities of the Netherlands (*Universiteiten van Nederland*) have developed a national framework that lists a broad set of principles for the mutual recognition of university teacher qualifications (UTQs) offered by HEIs (VSNU, 2008[224]). Following a review of all UTQs offered by HEIs in 2018, the Universities of the Netherlands concluded that while "all UTQ competencies formulated in 2008 are still adequate", recent developments in teaching and learning require institutions to pay specific attention in future to the development of four key competencies among instructional staff, one of which is "education and ICT and blended learning" (VSNU, 2018, p. 16[225]).

5.4.2 Provision of opportunities for peer learning, training, collaboration and sharing of high-quality digital education content and practices

To respect the autonomy of HEIs and instructors, rather than developing strict regulation on how institutions should organise their staff recruitment, professional development and appraisal practices, public authorities are supporting the development of a wide range of opportunities for higher education instructors, leaders and IT support staff to engage in peer learning, collaboration and exchange on digital teaching and learning and its QA. This includes support for staff development and participation in national and international networks and co-operation projects on (digital) teaching and learning, as well as the development of online platforms to promote the sharing of digital education content (including MOOCs and OER). A smaller number of OECD jurisdictions has also set up dedicated national centres to offer guidance and training on quality and inclusive (digital) pedagogy, and to support the quality enhancement of the staff professional development offered by the institutions themselves.

National networks and co-operation projects

In many OECD jurisdictions, several national networks have emerged to build communities of practice around digital learning. These networks are managed by a range of different organisations, including QA agencies, foundations, sectoral co-operative organisations, National Rectors' Conferences and, in some cases, individual HEIs. SURF in the **Netherlands**, Flexible Learning **Norway** (FUN) and the Online Learning Consortium (OLC) in the **United States** are three examples of sectoral co-operatives that seek to bring together higher education practitioners around digital teaching and learning. In the **United Kingdom**, AdvanceHE, Jisc and the Association for Learning Technology (ALT) organise a wide range of activities that also aim to bring together (higher) education practitioners around digital learning-related matters. For example, Jisc's "Digital Leaders Programme" has been running since 2015 and offers online, in-person and on-site training to academic leadership in United Kingdom HEIs to help them understand how best to integrate digitalisation into their existing policies and processes (Jisc, 2022b[226]). An example of an individual HEI driving collaboration at national level comes from **Hungary** where, in

2020, the ICT Research Centre at Károli Gáspár University of the Reformed Church launched an annual conference series on digitalisation in higher education (Pintér, 2021[227]).

International networks and co-operation projects

Three major international networks for digital learning are the European Distance and E-Learning Network (EDEN, 2022[228]), the International Council for Open and Distance Education (ICDE, 2022[229]) and the European Digital Learning Network (DLEARN, 2022[230]). The European Commission-funded Empower Online Learning Leadership Academy is another example of a forum for "high-level discussions, creative problem solving and strategic thinking in response to new and emerging models of teaching and learning" (EMPOWER, 2022[231]). Another flagship development in the European context is the European Universities Initiative (EUI), through which the European Commission has, to date, supported 41 transnational alliances involving more than 280 institutions across 32 countries. Within these alliances, a diverse range of co-operation models are being explored, including joint degrees and micro-credentials, as well as (virtual) staff and student mobility, which all place digital education at the heart of a common long-term strategy. The EUI creates new opportunities and addresses challenges in the digitalisation of higher education, including how to develop fit-for-purpose QA approaches (European Commission, 2020[232]). The European Commission has also launched the Digital Education Hub to address weak spots and perceived fragmentation in the institutional, national and international landscape of HEI collaboration and exchange around digital learning. The initiative seeks to shape a European community of practice aimed at engaging a wide variety of stakeholders and supporting cross-sector collaboration on digital education (European Commission, 2022b[233]).

In some systems, the government funds the co-ordination and participation of HEIs in national networks. For example, between 2019 and 2022, SURF in the **Netherlands** received funding from the Dutch Ministry for Education, Research and Culture (OCW) to co-ordinate collaboration between 40 HEIs for the development of a wide range of resources, materials and guidelines to advance the quality of digital higher education around eight "acceleration zones"[20] (SURF, 2022b[234]). In 2022, the National Growth Fund allocated a further EUR 560 million to SURF for the continued co-ordination of collaboration on digital transformation between the primary, secondary and higher education sectors (SURF, 2022c[235]). Although less common, some governments also provide co-funding to HEIs that have successfully managed to secure funding for international projects. In Europe, 11 jurisdictions[21] receive co-funding from the government if they are successful in applying for the EUI (Zhang, 2022, pp. 27-283.[146]). Other systems also use "softer" mechanisms to incentivise inter-institutional collaboration on digital learning. One of these is QA. For example, in **Estonia** internationalisation (including virtual mobility) is one of the 12 quality domains included in HAKA's *Guidelines for Institutional Accreditation* (HAKA, 2022b[34]).

Development of digital education content sharing platforms

An increasing number of OECD jurisdictions has funded the development of online platforms to support the dissemination of high-quality digital education content and practices among HEIs. An important aspect of such platforms is a strong commitment to "openness" as a means of promoting quality. In theory, the user community helps to ensure that open digital content is of high quality and kept up to date through visible use (or not) of the resources and users' ability to provide continuous feedback. For example, B.C.

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[20] Strengthening human digital capital; Secure and reliable use of education data; Accelerating together; Facilitating professional development of lecturers Evidence-informed educational innovation with ICT; Making education more flexible; Towards digital (open) resources; Digital education of practical skills; Remote digital assessment; EdTech for educational innovation.

[21] Austria, Belgium (French Community), Croatia, Czech Republic, Finland, France, Germany, Italy, Poland, Slovenia and Spain.

Campus in **Canada**, established in 2012, is well-known internationally for its role in promoting OER and hosts the B.C. Open Textbook Collection (Barker et al., 2018[236]). In **New Zealand**, Ako Aotearoa maintains an online knowledge centre with over 1 700 searchable resources (Coolbear, 2014[41]). In Europe, examples include **Ireland**'s National Resource Hub (National Forum for the Enhancement of Teaching and Learning, 2022[237]), the **Austrian** iMoox platform (iMoox, 2022[238]) and the **French** *Université numérique* (FUN, 2022b[239]). A recent EUA review found that such platforms are, however, still developing in Europe. At present, 19 systems have no national repository or online platform for sharing teaching material, resources and practices[22] (Zhang, 2022, p. 28[146]).

Establishment of a national centre for the enhancement of teaching and learning

As mentioned at the start of this section, several OECD jurisdictions have set up publicly funded national centres. In many cases, these centres develop national guidelines, complementing national standards developed by QA agencies, to support institutions with the quality enhancement of their teaching and learning practices. In some cases, specific guidance for the quality enhancement of digital education has been developed. **New Zealand**, for example, has a National Centre for Tertiary Teaching Excellence (Ako Aotearoa). In 2005, the centre developed a set of *National eLearning Guidelines*, independent from accreditation processes (Coolbear, 2014[41]). Similarly, Flexible Education **Norway** (FuN), which organises and co-ordinates the activities of 50 providers of flexible education in the country, has produced *A Guide to Quality in Online Teaching and Learning* in 2018 (Flexible Education Norway, 2018a[42]). In **Ireland**, the National Forum for the Enhancement of Teaching and Learning – funded by the Higher Education Authority (HEA) – has developed an updated *Guide to Developing Enabling Policies for Digital and Open Teaching and Learning* (National Forum for the Enhancement of Teaching and Learning, 2021a[206]), a five-step guide to support the higher education sector with the development of digital education policies.

In addition to providing sectoral guidance, these centres also provide more hands-on support and training to HEIs to develop their internal QA systems. In the **United Kingdom**, in addition to organising programmes, conferences and events for educators to enhance their skills, Advance HE accredits institutional staff professional development programmes based on the UK *Professional Standards Framework for Teaching and Supporting Learning in Higher Education* (Advance HE, 2019[240]). In **Korea**, the Ministry of Education designated the Korea Education and Research Information Service (KERIS) as the University Distance Learning Centre (UDLC) in 2020 and created ten regional centres across the country. The UDLC has hosted numerous lectures and training sessions on digital pedagogies for higher education instructors, as well as created a dedicated website providing centralised guidance on how to conduct online provision (Group of G20 Education Working Group, 2022[241]). In **Germany**, the German federal government and the states (*Länder*) set up the Foundation for Higher Education Teaching and Learning in January 2021, with funding coming from the federal government, complemented by the *Länder*. The Foundation is tasked with supporting the quality enhancement of teaching and learning in German higher education. Among others, the Foundation organises networking and peer learning opportunities for practitioners, and funds innovative teaching and learning projects for individual institutions or networks. One of the funding calls in 2021 focused specifically on strengthening higher education teaching through digitalisation (Stiftung Innovation in der Hochschullehre, 2022[242]).

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[22] Belgium (Flemish Community), Cyprus, Czech Republic, Denmark, Estonia, Georgia, Germany, Iceland, Italy, Kazakhstan, Latvia, Lithuania, Poland, Portugal, Spain, Sweden, Switzerland, UK (England and Scotland).

5.5 Processes: Supporting national and international performance monitoring and benchmarking of digital teaching and learning quality

A fourth key area of support centres on institutions' capacity to make informed decisions for the further development of their QA and quality enhancement practices for digital teaching and learning, based on up-to-date national and international evidence and best practice. A small number of jurisdictions has started to adapt its national administrative and graduate tracking data systems to digitalisation, to track and compare the performance of students in fully online, hybrid and in-person study programmes (e.g. drop-out rates, time-to-completion rates, graduate employment outcomes, etc.). In some systems, national surveys focusing on the quality of digital teaching and learning have emerged, in many cases in response to the COVID-19 pandemic. Finally, a more limited number of jurisdictions are supporting more regular and focused thematic reviews of digital teaching and learning (e.g. reviews focusing on the identification of best practice for online assessment, challenges and priorities for digital education infrastructure, etc.).

5.5.1 National data collection and performance monitoring of digital higher education

In recent years, some OECD jurisdictions have started to adapt their national administrative data systems on higher education to digital education. Adapting data systems to digitalisation is important, as it can provide institutions with comparable national-level data on students' performance and interests in fully online, hybrid and in-person study programmes, to inform institutional decision-making on the expansion or reduction of their offer in certain disciplines or study modes. Administrative data can be defined as "the data an institution collects to manage its processes (for instance, of enrolment, assessment, and completion), students, staff, academic programmes, research, finances and physical assets. Administrative data is housed in the institution's databases and is processed by its systems – such as its student management system, finance system and asset management system" (OECD, 2021, p. 77[243]). The collection of HEI administrative data at government level is typically done by extracting either unit-record data or aggregated summary data. Few higher education systems, however, collect comprehensive data on the performance of institutions' digital study programmes. Exceptions are the **United States** Integrated Post-secondary Data System (IPEDS) (NCES, 2021[244]) and the **New Zealand** Single Data Return (SDR) system (New Zealand Ministry of Education, 2021[245]). In IPEDS, data is provided on distance education programmes and in SDR, all courses in post-secondary education are categorised according to the extent to which they use online delivery. Such data can enable analysis and comparison of digital study programmes and courses, based on demographic characteristics, level and field of study (e.g. student enrolment, dropout and completion rates) (Guiney, 2016[246]).

5.5.2 National surveys on the quality of digital teaching and learning

Governments can also support institutions to make informed decisions on the quality enhancement of their digital offer, based on national evidence and best practice, through national surveys, such as surveys of students enrolled in or graduated from digital study programmes (OECD, 2021[247]). Several governments have started to fund specific national surveys focusing on students' experiences of digital teaching and learning. For example, the **Irish** National Digital Experience (INDEx) survey of 2019, which was completed by 2 484 students and 4 445 staff at 32 HEIs (National Forum for the Enhancement of Teaching and Learning in Higher Education, 2020[248]). Several HEIs have used analysis of students' responses to the survey to shape their response to the pandemic, inform the purchase of additional laptops for their laptop rental schemes or develop and disseminate guidance materials for students and instructors (National Forum for the Enhancement of Teaching and Learning in Higher Education, 2021b[249]).

In many cases, however, specific national surveys focusing on the quality of digital higher education have only been launched in response to the sudden shift to fully remote and online instruction during the COVID-19 pandemic and have been carried out by a wide range of organisations and not conducted on a

regular basis. An example is **Hungary** where, in 2020, the National Union of Students (HÖOK) conducted a student survey shortly after the transition to emergency remote learning. More than 17 000 students (mostly undergraduate) participated and 12 000 student responses were used in the analysis (HÖOK, 2020[250]). The Ministry for Culture and Innovation (KIM) also commissioned two surveys on digital higher education in late 2020, administered by the Digital Higher Education Competence Centre (DHECC) (DSN/DHECC, 2021[251]). In addition to this, the OECD conducted a higher education stakeholder consultation survey in February-March 2021 as part of the project *Supporting the Digital Transformation of Higher Education in Hungary* (OECD, 2021[252]). In 2022, the Educational Authority (OH) also included a COVID-19 module in its annual Graduate Career Tracking Survey (DPR) (Educational Authority, 2020[253]).

It is therefore important for governments to consider institutionalising specific surveys on digital higher education or embedding specific questions related to digital teaching and learning in existing national survey instruments. Examples of institutionalised and regular surveys of students' experience of digital teaching and learning can be found in the United Kingdom, New Zealand, and Australia. First piloted in 2016 and based on the Digital Experience Insights (DEI) survey in **Australia** and **New Zealand** (Beetham, Newman and Knight, 2019[254]), Jisc in the **United Kingdom** has been collecting students' views on the quality of digital teaching and learning through an annual student survey across all United Kingdom HEIs since 2017/2018. The latest edition of the survey analyses the responses of 62 658 students in the 2020/2021 academic year (Jisc, 2021[255]), which is almost three times more than the 27 069 students who responded in the 2019/2020 survey (Jisc, 2020b[256]). In the **Netherlands**, the government launched a national student survey on higher education students' mental health and substance abuse in 2021 as part of its response package to tackling mental health issues among higher education students. While the survey does not focus on the mental health of online students specifically, the results from the second edition of the survey, which collected responses from 28 442 higher education students, show that 24.4% of students have looked for online support to deal with mental health issues. 13.9% of those students looking for support tried to find an online course to help them (RIVM, 2022, p. 81[257]). These results show that providing on-campus psychological support to students will continue to be important, even if an increasingly large part of higher education is offered online in future.

5.5.3 Thematic reviews of digital teaching and learning

Finally, a small number of jurisdictions has sought to inform institutional policy and best practice on the QA of digital higher education by supporting thematic reviews of digital learning and QA. Most of these, however, are ad hoc and rarely institutionalised. For example, an exploratory study, conducted in 2020 by the Centre for Higher Education Governance Ghent (CHEGG), analysed 17 accreditation reports prepared by four countries (six in Croatia, four in Estonia, three in Finland and four in Portugal) to better understand how different QA agencies translate the ESG standards 1.2 (Design and approval of programmes) and 1.9 (Ongoing monitoring and periodic review of programmes) (Manatos and Huisman, 2020[258]). As mentioned in section 2 of this paper, the **United Kingdom**'s QAA has supported HEIs in England and Wales to respond to the COVID-19 pandemic by collecting and disseminating best practice for fully online and remote instruction through a thematic review of HEI practices and challenges in both nations (QAA, 2020c[83]), (QAA, 2021[84]). In **Estonia**, the national QA body HAKA carried out a thematic review of institutions' experiences of fully online and remote learning during the COVID-19 pandemic (HAKA, 2020a[35]). In **Ireland**, the Ministry of Education set up a National Institute for Digital Learning (NIDL) as a dedicated centre to strengthen and disseminate studies on digital education (Brown and Keogh, 2021[259]). The National Forum for Teaching and Learning also carries out regular thematic reviews of teaching and learning in higher education, in some cases specifically focusing on digital education. In 2016, for example, the centre carried out a national review of HEIs' technical infrastructure (National Forum for the Enhancement of Teaching and Learning in Higher Education, 2017[260]).

In the United States and Norway, digital higher education is reviewed on a more regular basis. In the **United States**, the Campus Computing Project is "the largest continuing study of the role of information technology in American higher education" (Campus Computing Project, 2022[261]). The organisation has been carrying out an annual survey of American HEIs, focusing on specific quality issues related to ensuring quality digital teaching and learning, since 1994. The latest (2019) survey focused on challenges and best practice for hiring and retaining campus IT talent national (Green, 2019[262]). In **Norway**, the Nordic Institute for Studies, Innovation and Education has published a report on the use of digital technology in higher education (Korseberg et al., 2022[263]), and the Norwegian Ministry of Education and Research also monitors the "digital status" (*Digital tilstand*) of higher education every two years. So far, five such reports have been published, and the latest one dates to 2021 (DIKU, 2021[264]).

6 Conclusions

This paper has examined how QA agencies and HEIs across the OECD and EHEA have responded to the challenge of assuring the quality of digital higher education, as well as how public authorities can support institutions to improve the quality of their digital provision.

6.1 An integrated approach to the quality assurance of digital higher education

The advice and guidance provided by international and regional quality organisations such as INQAAHE and ENQA, as well as other international bodies important to the field of (digital) education, indicates a preference for an integrated approach to the QA of digital higher education. This involves embedding specific considerations for digital education into existing QA procedures, as well as strengthening the digital education expertise of external review teams. The advantage of adopting such an approach is that one common set of standards is applied to all types of provision, while being sensitive to the specific quality issues related to different modes of provision.

6.1.1 Integrating specific considerations for digital education into quality assurance activity

This paper has identified three main approaches to the QA of digital higher education based on the experiences and practices of QA agencies across OECD and EU member countries.

- *No approach for the quality assurance of digital higher education.* In 23 jurisdictions, there is no or limited evidence of enhanced quality standards or guidance for digital higher education.

- *Common standards and guidance for the quality assurance of digital higher education.* In nine jurisdictions, common standards for the accreditation of in-person and digital study modes are used. In some of these systems, the QA agency or another (publicly funded) organisation, has developed non-binding national guidelines to support the quality enhancement of digital higher education. In others, the standards themselves are enhanced with specific considerations or guidelines for digital education.

- *Specific standards for the quality assurance of digital higher education.* In twelve jurisdictions, specific or separate standards are applied for the QA of digital higher education to those that apply to traditional delivery. The standards applied by the QA agencies differ in terms of their scope. In five jurisdictions, frameworks were identified that apply broadly to all types of digital education, whereas in eight jurisdictions the frameworks focus on a specific type or aspect of digital education (e.g. specific standards for fully online or hybrid provision). They also differ in terms of their area of focus. In two jurisdictions, specific standards are used to accredit providers of digital higher education; in ten jurisdictions, they are used for programme level accreditation.

6.1.2 Integrating specific considerations for digital education into quality enhancement activity

In addition to formal QA, a small number of QA bodies has started offering specific supports to institutions to enhance the quality of their digital provision. This is partly a response to HEIs requiring additional support

and advice during the COVID-19 pandemic, as well as calls from international organisations to allow for the self-accreditation of programmes by HEIs and for external QA to become more "enabling".

Quality enhancement or support for digital education offered by QA agencies typically includes developing a common taxonomy for digital education, providing training for institutional QA staff or collecting and disseminating best practice for the QA of digital education. Transnational quality organisations such as INQAAHE and ENQA can also play a key role in supporting QA agencies and HEIs to develop their QA systems for digital higher education, by developing international standards and indicators for digital education and by promoting a common approach to the QA of digital higher education. These organisations are also uniquely positioned to encourage and facilitate collaboration and cross-border QA for digital higher education, particularly for those QA bodies and HEIs that might lack the required internal expertise on digital education to carry out their own quality reviews of digital education.

6.2 A focus on eight key principles for ensuring quality digital higher education

Researchers and practitioners from a wide range of private, non-profit, non-governmental and research organisations active in the field of QA and (digital) education have been quick to develop quality frameworks for digital higher education. Many of these frameworks focus on specific standards and indicators for the QA of fully online or hybrid education, or key considerations at the institution, programme, course or individual student and instructor level. Such frameworks have mainly been developed to inform institutional self-assessment of digital learning by HEIs, reflecting the fact that the responsibility for quality rests primarily with the HEIs themselves. However, the quality standards and associated indicators included in these frameworks can also be used to inform the development of *specific* indicators for digital education by QA agencies, to be embedded in existing QA frameworks.

Based on an analysis of the standards and indicators included in a wide range of international quality frameworks for digital higher education, this paper has identified eight key principles and 25 associated indicators for ensuring quality digital higher education.[23] The discussion of trends and best practice in how institutions are supporting and monitoring the implementation of these principles showed that, as HEIs develop their internal QA systems for digital education, it will be important for them to pay specific attention to finding effective mechanisms for the collaborative implementation of QA standards and to align all stakeholders, both internal and external, around shared quality goals.

Four focus areas for improving the quality of digital teaching and learning emerged:

- *Digital pedagogy*. A need for institutions to develop specific standards or guidance for the QA of digital course content, design, delivery and assessment (by supporting the effective use of new digital technologies).
- *Supporting instructors*. The importance of supporting and incentivising staff professional development to enhance digital pedagogies (and in this context, managing staff workload).
- *Supporting students*. The importance of adequately preparing and supporting students for digital learning (with a particular focus on mental health).
- *Feedback and performance monitoring*. A need for more detailed and up-to-date data on the quality of digital higher education (by utilising the potential of digital technologies such as learning analytics).

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[23] The eight proposed key principles are: Vision, mission and strategy for digitalisation and innovation; Organisational quality culture centred on digitalisation, innovation and collaboration; Digital education infrastructure; Digital course content, design, delivery and assessment; Supporting and incentivising staff professional development; Preparing and supporting students for digital learning; Monitoring the quality of digital teaching and learning; and Strengthening feedback and monitoring practices.

6.3 Comprehensive and co-ordinated institutional support for digital higher education

Finally, the paper discussed the crucial role of governments and other national-level sector organisations in supporting HEIs to strengthen the quality of their digital teaching and learning offer and internal quality management practices. In this context, the paper underlined the importance of designing the institutional support landscape for digital higher education in close collaboration with HEIs and national-level stakeholder organisations around shared quality goals.

The paper discussed four key areas of institutional support:

- *Policies*. The development of national strategies, guidelines and toolkits for digital higher education and QA, to incentivise HEIs to build an institutional digitalisation and QA strategy.
- *Resources*. The development, maintenance and effective use of digital education infrastructure through the provision of central and targeted government funding, as well as guidance, training and support for the maintenance and effective use of digital technology by NRENs and sectoral associations.
- *People*. The professional development of instructional staff, through the introduction of national regulation, incentives and opportunities for peer learning, collaboration and dissemination of best practice.
- *Processes*. Supporting institutional QA processes by adapting national administrative and graduate tracking data systems to digitalisation, introducing a cyclical survey of digital learning, and funding thematic reviews.

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Annex A: Quality standards and guidance for digital higher education

Table 15. Mapping of approaches for the quality assurance of digital higher education across OECD and EU member states

Jurisdiction	Organisation	Date	Title	Mandatory	Scope	Level
1. No approach (23 jurisdictions)						
In these higher education systems, there is no or limited evidence of enhanced standards or guidance for digital higher education.						
Austria, Belgium (Flemish Community), Belgium (French Community), Chile, Colombia, Costa Rica, Denmark, France, Germany, Greece, Iceland, Israel, Italy, Korea, Latvia, Lithuania, Luxembourg, Mexico, Netherlands, Poland, Slovakia, Slovenia, Türkiye						
2. Common standards and guidance (9 jurisdictions)						
In these higher education systems, common standards are used for the QA of digital higher education. In some cases, the QA agency (or another publicly funded body) has developed specific guidance to support the implementation of the standards in digital settings. In other cases, the standards themselves include specific considerations or guidelines for digital education.						
Australia	TEQSA	2019	Guidance Note on Technology-Enhanced Learning	No	All types	Institution
Estonia	HAKA	2020	Guidelines for Institutional Accreditation	Yes	All types	Institution
Finland	FINEEC	2020	Principles of Online Implementation: Addendum to the Audit Manual for Higher Education	Yes	N/A	Institution
New Zealand	Ako Aoteorarea	2005	National eLearning Guidelines	No	All types	Institution
Norway	Flexible Education Norway	2018	A Guide to Quality in Online Teaching and Learning	No	All types	Institution
Spain	ANECA	N/A	No specific guidelines for digital higher education were identified.	N/A	N/A	N/A
Sweden	UKÄ	2008	E-learning Quality: Aspects and Criteria for	No	All	Institution

Jurisdiction	Organisation	Date	Title	Mandatory	Scope	Level
			Evaluation of E-Learning in Higher Education		types	
Switzerland	AAQ	N/A	No specific guidelines for digital higher education were identified.	N/A	N/A	N/A
United Kingdom	QAA	1999	Guidelines for Distance Learning	No	All types	Institution
	QAA	2004	Collaborative Provision and Flexible and Distributed Learning	No	All types	Institution
	QAA	2018	Quality Code for Higher Education	Yes	N/A	Institution

3. Specific standards (12 jurisdictions)

In these higher education systems, specific or separate standards are applied for the QA of digital higher education to those that apply to traditional delivery.

Canada	CAQC	2011	Additional Quality Assessment Standards for Programs Delivered in Blended, Distributed or Distance Mode	Yes	All types	Programme
	Digital Learning Advisory Committee (British Columbia)	2022	Guidelines for Technology-Enhanced Learning	Yes	All types	Institution
Croatia	ASHE	2016	Criteria and Procedures for Evaluating Online Studies	Yes	Online	Programme
Czech Republic	NAB	2016	Specific requirements for study courses in the distance form of study	Yes	Online	Programme
Estonia	HAKA	2020	E-Course Quality Label	No	All types	Programme
	HAKA	2022	Guide to Creating a Quality E-Course	No	All types	Programme
Hungary	MAB	2017	Professional Examination Points in the Assessment of the Launch of a Bachelor's Programme	Yes	Online	Programme
	MAB	2017	Professional Examination Points in the Assessment of the Launch of a Master's Programme	Yes	Online	Programme
Ireland	QQI	2018	Statutory Quality Assurance Guidelines for	Yes	Hybrid	Institution

Jurisdiction	Organisation	Date	Title	Mandatory	Scope	Level
			Providers of Blended Learning Programmes			
	National Forum for the Enhancement of Teaching and Learning in Higher Educaiton	2021	Guide to Developing Enabling Policies for Digital and Open Teaching and Learning	No	All types	Institution
Japan	MEXT	1981	Standards for the Establishment of Distance Learning Programs at Universities	Yes	Online	Programme
	MEXT	2022	Improvement and Enhancement of the Quality Assurance System for a New Era	No	All types	Institution
Malta	MFHEA	2021	Guidelines for the Quality Assurance of Online Learning Providers	Yes	Online	Institution
Portugal	A3ES	2021	Guidelines for Requesting Prior Accreditation of a New Study Programme – Distance Education (University and Polytechnic Education)	Yes	Online	Programme
Romania	ARACIS	2020	Standards and Guidelines on External Evaluation of the Quality of Distance Learning (DL) and Part-Time (PTL) Degree Programmes	Yes	All types	Programme
	ARACIS	2022	Standards and Guidelines on External Evaluation of the Quality of Hybrid Learning Degree Programmes	Yes	Hybrid	Programme
Spain	ANECA	2022	Quality Label for Distance Learning and Hybrid Education	No	All types	Programme
United States	DEAC	2020	The DEAC Accreditation Handbook	No	All types	Programme
	NWCCU	2016	Guidelines for the Evaluation of Distance Education (On-line Learning)	No	Online	Institution
	NECHE	2018	Guidelines for the Evaluation of Distance Education (On-line Learning)	No	Online	Institution
	HLC	2009	Guidelines for the Evaluation of Distance Education (On-line Learning)	No	Online	Institution

Annex B: Analysis of 12 international quality frameworks for digital higher education

Table 16. Key features of 12 international quality frameworks for digital higher education

Quality framework	Focus	Level covered by quality framework			
		Institution	**Programme**	**Course**	**Learner**
1. Quality Scorecard for Administration of Online Learning Programs (OLC, 2022a[265])	Online education	✓	✓	✓	
2. Quality Scorecard for Blended Learning Programs (OLC, 2022b[266])	Hybrid education	✓	✓	✓	
3. Higher Education Rubric (Quality Matters, 2018[98])	All types	✓	✓	✓	
4. ACODE Benchmarks for Technology-Enhanced Learning (Sankey and Padró, 2016[95])	All types	✓	✓		
5. Online Learning Toolkit (APEC, 2019[61])	All types	✓	✓		
6. Blended Learning Self-Assessment Tool (UNESCO, 2019a[16])	Hybrid education	✓	✓		
7. Benchmarking Toolkit for Technology-Enabled Learning (Sankey and Mishra, 2019[267])	All types	✓	✓		
8. Benchmarking Framework for Online, Open, Smart, and Technology Enhanced Higher Education (Hassan, 2022[15])	All types	✓	✓		
9. eLearning Guidelines (Coolbear, 2014[41]).	All types	✓	✓	✓	✓
10. DigCompOrg (Kampylis et al., 2015[18])	All types	✓			
11. European Maturity Model for Blended Learning (Goeman, Poelmans and Van Rompaey, 2018[97])	Hybrid education		✓	✓	
12. E-xcellence (EADTU, 2016[96])	All types	✓	✓		

Table 17. Common, less common and emerging quality domains from 12 international quality frameworks for digital higher education

Context	Common domains	Less common domains	Emerging domains
National context			Completion rates Student engagement rates Lifelong learning participation Graduate destination and employability
Organisational context	Governance, management and leadership Vision, policy and strategy Infrastructure, finance and learning environment Faculty training and professional development Staff support	Academic administrative processes Quality assurance	Societal impact and outreach
Programme context	Learning design and course delivery	Content development and learning resources Assessment practices	Cheating Online proctoring
Learner experience context	Student support and experience	Learning outcomes Equity, diversity and inclusion	Student experience Student satisfaction Digital literacy Completion rates

Source: Based on an analysis of 12 international quality frameworks for digital higher education (see Annex B, Table 16).

Annex C: Selected quality frameworks for digital higher education

Table 18. Selected quality frameworks for the identification of key indicators for the quality assurance of digital higher education

Quality framework	Focus	Region	Primary focus/level
1. Benchmarks for Technology-Enhanced Learning (Sankey and Padró, 2016[95])	All types	Australasia	Institution level
2. E-xcellence (EADTU, 2016[96])	All types	Europe	Institution level
3. DigCompOrg (Kampylis et al., 2015[18])	All types	Europe	Institution level
4. European Maturity Model for Blended Learning (Goeman, Poelmans and Van Rompaey, 2018[97])	Hybrid education	Europe	Programme and course level
5. Higher Education Rubric (Quality Matters, 2018[98])	All types	United States	Programme and course level
6. Quality Model for OER (Mayrberger, Zawacki-Richter and Müskens, 2018[123])	OER	Germany	Course level (quality of OER)
7. Universal Design for Learning Guidelines (CAST, 2018[125])	All types	United States	Course level (course design)
8. TeSLA Framework for E-Assessment (Foerster, 2019[137])	All types	Europe	Course level (e-assessment)
9. DigCompEdu (Redecker and Punie, 2020[19])	All types	Europe	Individual level (instructors' digital competencies)
10. The Digital Capabilities Framework for Students (University of Tasmania, 2020[173])	All types	Australia	Individual level (students' digital competencies)