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Creating an
Online
Dimension for
University
Rankings
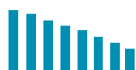
PROJECT DELIVERABLE: IO2.A3
Guidelines to improve the performance of
online institutions
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Universitat
Oberta
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The Open
University

Consiglio
Nazionale delle
Ricerche

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1   Introduction

The higher education arena is becoming an ever more competitive market, with universities under constant pressure to secure increasing numbers of students and research funding. It is in this context that university ranking systems have become powerful tools. Systems such as the Times Higher Education World University Rankings (Times Higher Education, 2017) and the Academic Ranking of World Universities (ShanghaiRanking Consultancy, 2017) enable universities, potential students, policy makers and funders to measure and compare universities at a global level.

However, university ranking systems have been criticised (Amsler & Bolsmann, 2012; Lynch, 2015). Although 'learning experience' and 'student satisfaction' are increasingly becoming important, the main ranking systems still tend to focus on traditional measures such as 'reputation' and 'research'. In addition, they employ a variety of conceptual frameworks and volatile methodologies, yet they ignore institutional diversity and lead to homogenization. In addition, they often have ill-defined target audiences (Vught & Ziegele, 2011, p. 27), or have few winners and many losers. The traditional ranking systems also impose a hierarchy upon widely different university offerings (for example, what does it mean for one university to be ranked at 21 and another to be ranked at 31?), which is something the recently developed European-funded U-Multirank system (U-Multirank project, 2017) aims to address by enabling users to compare universities according to specific characteristics.

Most importantly for this project, although online universities are known to play a crucial role in European Higher Education (McAleese *et al.*, 2014), all of the **<u>existing ranking systems ignore the specific characteristics of online universities</u>**.

Despite sharing many goals with traditional universities, online universities (such as UOC and the Open University) use a variety of teaching approaches and delivery mechanisms, and cater for a more disparate range of students and student needs. The existing ranking systems do not measure and thus inevitably undervalue these unique characteristics (or at least the indicators or metrics that they use are inapplicable), making it especially difficult for online universities to compete effectively in the global higher education marketplace.

This is also true of other online education providers, such as the recently emerging MOOC enterprises and Higher Education Open Educational Resources. However, the rapid growth of these low-cost or free online offerings highlights raises questions about the quality of online provision *between the various online providers*, necessary for prospective students to be able to make properly informed choices, which the existing ranking systems are also unable to address.

Accordingly, the CODUR project's two core objectives are:

a)   to produce new criteria and indicators that are applicable to online distance educational offerings, that might contribute to a new online dimension in the U-Multirank international ranking system; and

b)   to promote and integrate this new dimension into the U-Multirank ranking system and to the 3 principal pan-European Higher Education networks and quality organizations through a series of high-level meetings and events.

In this deliverable, IO2.A3, we present guidelines intended to help online institutions improve the quality of their teaching and learning processes, so as to achieve better positioning in rankings and comparisons provided by the new ranking tool. The goal of these guidelines is to foster European leadership in online education rankings. (The new ranking

tool developed by the CODUR project is described by Pozzi, Mangello, Passarelli, and Persico (2018).)

Sections 2 and 3 provide a background and context for the guidelines that are presented in section 4. In section 2 "Quality in online education" we provide an overview of the nature of quality improvements in online education that can be effected, e.g. in terms of operational improvements, or quantitative and qualitative changes in learning and teaching. This section is intended to act as a basis for the guidelines that are present in section 4. In section 3 "Educational contexts" we provide an overview of three different national educational contexts: Italy, Spain and the UK. This section is intended to help readers from a range of national contexts interpret and utilise the guidelines in section 4. Readers interested in other national contexts may use these descriptions to identify similarities to the context in which they are interested.

In section 4 "Guidelines development for online institutions in specific National Education Systems" we present guidelines that are intended to help online institutions to improve the quality of their online teaching and learning processes. This section includes a set of general guidelines intended to be useful for a range of educational contexts. These general guidelines are complemented by examples of specific guidelines for three particular national educational contexts i.e. the UK, Spain and Italy. The guidelines are all structured according to the quality criteria developed by the CODUR project (Pozzi et al., 2018).

In section 5 "Scenario development for types of institutions and success factors" we describe scenarios illustrating how different types of institutions could utilise our guidelines, and put forward some criteria for success. We consider three broad classes of institution. Firstly, (i) degree-awarding institutions for which the main mechanism for teaching and learning is online i.e. students can carry out all the required learning without face-to-face interaction with teachers. Secondly,   (ii) degree-awarding institutions for which some teaching and learning opportunities are provided online, but students can learn what they need to without availing themselves of the online opportunities. Thirdly, (iii) MOOC platform providers, organisations that provide an eLearning platform but do not award degrees themselves.

In section 6 "Fostering a European Leadership in Online Education Rankings" we conclude by discussing what European leadership in Online Education Rankings could mean for a range of stakeholders, including students, institutions, and ranking providers.

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2 Quality in online education

2.1 Introduction

In this section we provide an overview of the nature of quality improvements in online education that may be effected by institutions. This overview is intended to act as a basis for the guidelines that are present in section 4.

We begin by considering the nature of quality itself because

> "The understanding of the term 'quality', its conceptualisation and operationalization, have obvious implications in any attempt to assure it"

> (Martin & Stella, 2007, p. 33).

In their chapter on quality assurance and accreditation in higher education Chalmers and Johnston (2012) remark that "The meaning of 'quality' has long been contested in higher education". Schindler et al. reviewed definitions of quality in higher education and identified four broad conceptualisations of quality, i.e. quality as (1) purposeful, (2) transformative, (3) exceptional and (4) accountable (Schindler, Puls-Elvidge, Welzant, & Crawford, 2015). These broad themes can be summarised as

1) Purposeful: quality as fulfilling pre-determined specifications, requirements, or standards.

2) Exceptional: quality as something distinctive, exclusive and excellent.

3) Transformative: quality as effecting positive change in students' learning in the affective, cognitive, and psychomotor domains, and personal and professional potential.

4) Accountable: quality as accountability to stakeholders, for the optimal use of resources and the delivery of educational products and services with zero defects.

(Schindler et al., 2015, p. 5).

Enhancements provided by 'Technology enhanced learning' may be characterised as

a) operational improvements (e.g., providing greater flexibility for students; making resources more accessible)

b) quantitative change in learning (e.g., increased engagement or time-on task; students achieving improved test scores or assessment grades) or

c) qualitative change in learning (e.g., promoting reflection on learning and practice; deeper engagement; richer understanding)

(Kirkwood & Price, 2014, p. 14). It is possible that any of these three types of enhancements could affect quality of an institutions provision under any of the four conceptualisations of quality. For example, an operational improvement (a) may make an institutions provision more purposeful, or exceptional, or transformative, or accountable.

CODUR guidelines are intended to help institutions identify and deliver enhancements of types (a), (b) or (c), so as to make an institution's provision more purposeful, or exceptional,

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or transformative, or accountable, or any combination of these. In so doing, an institution should be able to meet or exceed the criteria specified in the CODUR indicators.

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3   Educational contexts

3.1   Introduction

In section 3 "Educational contexts" we provide an overview of three different national educational contexts: Italy, Spain and the UK. This section is intended to help readers from a range of national contexts interpret and utilise the guidelines in section 4. Readers interested in other national contexts may use these descriptions to identify similarities to the context in which they are interested. The structure of the following subsections about particular national educational contexts are similar in order to make it easier to compare national specificities.

3.2   Characteristics of the Italian higher education context

In this section we provide an overview of the characteristics of the Italian higher education context, to highlight differences in how indicator data related to teaching and learning should be collected and interpreted.

Italy is divided into 20 administrative regions, which is further subdivided into 80 provinces. However, policy and directives for Higher Education Institutions are mostly issued at a national level, and evaluation is carried out by a national agency (ANVUR). On the other hand, Italian higher education Institutions are granted a high degree of autonomy, i.e. in choosing the learning curriculum, budgeting, and opening detached campuses / structures.

Most university curricula are split into a 3-year (Bachelor's degree or *laurea triennale*) and a 2-year (Master's degree or *laurea magistrale*) course. However, some degrees, most notably Medicine, Architecture and Law, still entail a single 4+ years course (*laurea a ciclo unico*).

In 2016–17, there were 1.7 million students studying at 96 Italian higher education institutions.

- Bachelor's degree course: 1 million

- Masters's degree course: 295,658

- *Laurea a ciclo unico*: 319,948

- Students from Italy: 1.63 million

- Students from the EU: 7,533

- Students from non-EU countries: 68,745
  (Figures from Ministero dell'Istruzione dell'Università e della Ricerca (2017)).

The following points summarise the Italian Higher Education context, and indicate potential relevant policy developments which are under consideration.

- Legislation and regulation

Most Italian HEIs (67 out of 96) are state-run. Private institutions have to be legally recognized by national authority in order to be able to award qualification with legal validity. Out of the 29 private Italian HEIs, 11 are online institutions.

Local-level regulation in state-run HEIS is issued by an HEI's rector, who is elected among full professors belonging to that HEI. The rector supervises all university structures and services, is in charge of disciplinary matters, chairs the Academic Senate and Board of Directors,

draws up agreements for external collaborations, and plans university teaching and research activities. Teaching regulations, including definition of learning outcomes for a specific course, type of final examination foreseen, assessment methodologies, and allocation of credits, are issued by rectoral decree and have to be approved by the Ministry of Education, University and Research (MIUR).

The Academic Senate, which is made up by the Rector, Faculty Deans and other elected representatives, establishes guidelines for activities and plans university development. University regulation and teaching activities have to be passed by the Academic Senate to be enacted.

Administrative, staff, and budgeting matters, instead, are regulated by the Administrative Council, made up of the Rector, Head of Administration and other academic and non-academic representatives. Other administative bodies may play a role, depending on each HEI's statute.

Since 2006, public HEI evaluation is carried out by the National Agency for Evaluation of University and Research (ANVUR), which is independent from academic staff.

- Data collection and publication

The Ministry for Education, University, and Research periodically publishes statistics on the university system as a whole, sociobiographical and career data for students, teaching regulations, financial aid for students, international mobility, and research. This data is publicly available at the MIUR portal for HEI data (http://ustat.miur.it/).

Additionally, the HEI consortium Almalaurea, which is comprised of 75 institutions, collects and publishes data on students' and former students' profile, academic performance, and occupational status. Its data is publicly available at Almalaurea website http://www.almalaurea.it/universita.

Lastly, ANVUR complies with the Transparent Administration Act of 2013, and as such, publishes detailed information on its internal structure, regulation, budgeting, activities, as well as all collected data about the evaluation of public HEIs (http://www.anvur.it/amministrazione-trasparente/).

- Student recruitment and student funding

Financial aid for students is mainly provided by the State-run *Diritto allo Studio* (literally, "Right to Study"), which issues scholarships and grants on the basis of both income/capital and performance (i.e. low academic performance may disqualify a student from a scholarship). Both scholarships and grants are not loans, and do not have to be repaid by students. Additionally, tuition fees for public HEIs in Italy cannot surpass 20% of state funding. As a result, public HEIs in Italy are comparatively cheap, with a yearly tuition fee between 850€ and 1400€. Combined with financial aid, this makes public Higher Education very accessible for prospective students, while private institutions (which include *all online universities*) are a much more expensive option.

- Policy and policy development

As stated above, Italian HEIs experience a high degree of autonomy, and can draw up their own statute and regulations. Therefore, each individual HEI is able to pursue its management, teaching and research goals in relative independence from state-wide regulation. However, teaching regulations and programmes have to be approved by MIUR, and ANVUR evaluation influences the amount of funding provided to public HEIs.

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The state of online HEIs in Italy significantly differs from that of other HEIs, since all Italian online HEIs (11) are led by private organizations. The existence of online HEIs has been recognized by the Italian State as late as 2003 (DM 17.04.2003). Therefore, all online Italian HEIs are relatively recent and still quite small in size (in 2017-2018, they collectively count about 75,000 enrolled students). Nevertheless, they have to confront themselves with a higher education system mainly dominated by public, in-presence institutions which experience high degree of autonomy and good offers for financial aid.

3.3 Characteristics of the Spanish higher education context

In this section we provide an overview of the characteristics of the Spanish higher education context that are likely to affect the gathering and use of data for teaching and learning indicators. We first present the territorial distribution of the administration of higher education. Then, we provide some figures regarding enrolment in the school year 2016-2017. We also refer to the legislation and regulation of higher education in Spain and to the existing means for data collection. Finally, the possibilities for student funding and the policy developments in the field of Spanish higher education are considered.

Spain is composed of 17 autonomous communities and has 84 universities. Policy and directives for higher education are divided between the State General Administration (the Ministry of Science, Innovation and Universities) and the autonomous communities (Departments of Education). While the State General Administration provides the general guidelines on educational policy, the Departments of Education of the autonomous communities develop and apply the state laws and manage their own education systems. Spanish higher education institutions are also granted a degree of autonomy. Evaluation is carried out by a national agency (ANECA) and by the regional agency: AQU, ACSUCYL, AAC, ACPUA, ACCUEE, AVAP, ACSUG, AQUIB, UNIBASQ, FCM (http://www.aneca.es/Agencias-de-las-Comunidades-Autonomas).

In 2016–2017, there were more than 1.5 million students studying at Spanish higher education institutions.

- Undergraduate: 1,284,041
- Master's degree: 190,143
- Doctoral programme: 71,548
- Students from Spain: 1.45 million
- Students from the EU: 39,075
- Students from non-EU countries: 75,125

(Ministry of Educational and Vocational Training, 2018).

The following points summarise the Spanish HE context now, and indicate potential relevant policy developments which are under consideration.

- Legislation and regulation

Spanish HEIs are regulated by the Spanish Constitution, the Organic Law 6/2001, of December 21, on Universities, and by a series of laws and royal decrees that complement and develop this main legal text. The Laws on Universities of the autonomous communities also regulate the articulation of universities and their functioning.

Most Spanish HEIs (50 out of 84) are state-run. State-run HEIs count with some autonomy in matters of regulation. The Government Council of each centre, leaded by a rector,

establishes the programmatic lines for the organization of teaching, research, and the management of human and economic resources. The rector is directly elected by the university community through a democratic election and counts with the support of the Board of Directors and the Advisory Board to direct, govern, and manage the HEI. The regulation of all these positions and boards is provided by the Law on Universities mentioned above. A final body, the Social Council, is regulated by the Law on Autonomous Communities. This body supervises the HEIs' economic activity. HEIs evaluation is carried out by the national quality agency (ANECA) and by regional quality agencies.

- Data collection and publication

The Ministry of Science, Innovation and Universities periodically publishes statistics and reports on students' enrolment and graduation, on financing and expenditure of Spanish public universities, on university staff, and on university public rates, among others. All these data are publicly available at the Ministry's website (https://www.mecd.gob.es/servicios-al-ciudadano-mecd/estadisticas/portada.html). A main source of data is the survey *Statistic of University Education*.

Additionally, the regional Departments of Education, the decision-making bodies of universities, the Social Councils, and the Quality Agencies, count with a platform for the gathering and management of data on the Spanish higher education system. This platform is called Integrated University Information System (SIIU) and monitors variables and indicators for all areas of the university system. However, these data are only available for the above-mentioned workers and for citizens on request.

The Quality Agencies also makes their results publicly available in their website through reports and white papers.

- Student recruitment and student funding

In Spain, the access rate to undergraduate studies by high school graduates is 47%. 9% of these young adults are expected to continue their education with a master's degree (according to the CRUE report, The University in Figures 2015/2016). Since the beginning of the implementation of the EHEA (2008) the incorporation of new students into the university has increased by 21.13%.

In state-run HEIs, students pay between 15% and 20% of tuition fees for undergraduate degrees and the government pays the rest of the cost of tuition. This makes Spanish public HEIs relatively cheap.

The State General Administration also provides a system of scholarships and grants funded with the general state budget, which is executed, developed, and controlled by the autonomous communities. Scholarships and grants are mainly based on need (low income, large family, gender violence victims, disability, etc.). Travel grants are also awarded to students from the island territories to guarantee their equal access to higher education. The scholarship scheme is regulated by royal decrees that develop the Organic Law 6/2001, of December 21, on Universities, and the financial threshold and other requirements for obtaining a scholarship are also periodically updated through royal decrees. Universities, and regional and state higher education bodies also offer some competitive scholarships based on performance.

- Policy and policy development

The State General Administration assumes part of the policy, including the direction of international relations in this matter and the Spanish representation in programs, forums

and international organizations and of the European Union, specific policies are designed and deployed at the regional level.

3.3.1   Characteristics of the Catalan higher education context

The Catalan University System has 12 universities. From 1985 the Catalan government is responsible for university policy. The Government of Catalonia is the principal financier of the seven public universities and also collaborates in the financing of the Universitat Oberta de Catalunya and the University of Vic. These last universities receive their funding through program contracts, of multi-annual validity, which guarantee that the resources they receive will be sufficient to carry out their academic and research activity.

The Catalan public universities receive public resources from the Administration of the Generalitat for:

- its operating expenses

- the achievement of strategic objectives

- investments and equipment

The Catalan university system has strategic lines for flexible academic offer, more international and of more quality, ability to attract and retain talent, provision of common services between universities that allows to save costs, guarantee equitable access to the university system and become a motor for the knowledge economy.

In 2016–2017, there were 264,622 students studying at Catalan higher education institutions.

- Undergraduate: 207,738

- Master's degree: 39,562

- Doctoral programme: 17,322

(Catalan University Quality Assurance Agency, 2018).

The Catalan University Quality Assurance Agency, AQU Catalunya, is the main instrument for the promotion and assurance of quality in the Catalan higher education system. AQU Catalunya is entrusted with the assessment, accreditation and certification of quality in the universities and higher education institutions in Catalonia.

AQU Catalunya is full member of the European Association for Quality Assurance in Higher Education (ENQA), and has been one of the first three agencies to be included in the European Quality Assurance Register for Higher Education (EQAR).

The Catalan University Quality Assurance Agency, AQU Catalunya is regulated by the Act 15/2015 on the Catalan University Quality Assurance Agency (Published in the Official Journal of the Government of Catalonia, DOGC, and dated 23 July 2015).

3.4   Characteristics of the UK higher education context

In this section we provide an overview of the characteristics of the United Kingdom (UK) higher education sector that are likely to affect the collection, production and use of indicator data related to teaching and learning. For example, we summarise the legislative, regulatory and policy context, the numbers of students, teaching staff and institutions, and existing schemes for collection and dissemination of relevant data.

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The UK is comprised of four countries (England, Northern Ireland, Scotland, and Wales). The government of the UK legislates for the UK as a whole, however Scotland, Wales and Northern Ireland each have their own government or executive. These bodies have legislative powers for higher education within their countries, and the UK government legislates for higher education in England. This means that some legislation and decisions are made on a UK basis, but others are specific to individual countries within the UK.

In 2016–17, there were 2.32 million students studying at UK higher education institutions.

- Undergraduate: 1.76 million

- Postgraduate: 551,585

- Full time: 1.80 million

- Part time: 518,930

- Students from the UK: 1.87 million

- Students from the EU: 134,835

- Students from non-EU countries: 307,540
  (Universities UK, 2017).

The following points summarise the UK HE context now, and indicate potential relevant policy developments which are under consideration.

- Legislation and regulation
  The Higher Education & Research Act 2017 established the Office for Students as the independent regulator for HE in England ("We regulate English higher education providers on behalf of all students"). The Teaching Excellence Framework was developed by the Department for Education and is carried out by the Office for Students.

- Data collection and publication
  The Office for Students uses a number of different data sources submitted by higher education providers, including Higher Education Students Early Statistics Survey (HESES) and Higher Education in Further Education Students Survey (HEIFES) surveys, data returned to the Higher Education Statistics Agency (HESA) and to the Education and Skills Funding Agency such as individualised student returns and finance returns. The Office for Students orchestrates the collection and dissemination of data for

  - the National Student Survey (NSS)

  - the Teaching Excellence Framework, which measures performance of HE providers in terms of student satisfaction (as measured by the NSS), continuation (as measured by data collected by the Higher Education Statistics Agency), and employment outcomes, as measured by responses to the Destination of Leavers from Higher Education survey (DLHE).

HESA publishes data on a variety of factors, including students, graduates, academic and non-academic staff, and HE providers[1]. HESA provides the Unistats website with a dataset intended to provide comparable sets of information about full or part-time undergraduate

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[1] https://www.hesa.ac.uk/data-and-analysis

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courses, designed to meet the information needs of prospective students. This dataset is also available in csv and XML formats for use by third-parties[2].

The Research Excellence Framework (REF) is the UK's system for assessing the quality of research in UK higher education institutions. It first took place in 2014, and the next exercise will be conducted in 2021. The REF produces metrics of research quality for 36 subject areas ('units of assessment') including three which can be considered as relevant to online education, i.e. 'Education' and 'Computer Science and Informatics'. Overall 154 institutions submitted data to the 2014 REF, of whom 36 submitted to the 'Education' unit of assessment, and 89 submitted to the 'Computer Science and Informatics' unit of assessment.

- Student recruitment and student funding
  The Universities and Colleges Admissions Service (UCAS) is an independent charity providing admissions services to UK HE institutions. It publishes data which describes applicants and applications at scheduled times throughout each academic year. The Student Loans Company provides data about maintenance loans, tuition fee loans and grants payments to students per HE institution.

- Policy and policy development
  A review of Post-18 Education and Funding was launched in March 2018, and is due to report in early 2019. "The review will consider how Government can ensure that the education system in England for those aged 18 years and over is accessible to all; supported by a funding system that provides value for money and works for students and taxpayers; incentivises choice and competition across the sector; and encourages the development of the skills that we need as a country" (Call for evidence).
  Introducing the National Audit Office's report on the higher education market (Morse, 2017), the author wrote "We are deliberately thinking of higher education as a market, and as a market, it has a number of points of failure. Young people are taking out substantial loans to pay for courses without much effective help and advice, and the institutions concerned are under very little competitive pressure to provide best value" (The National Audit Office, 2017).

The background and context provided in sections 2 "Quality in online education" and 3 "Educational contexts" is intended to serve as a basis for interpreting the guidelines that are presented in the following section i.e. section 4 "A3.1.   Guidelines development for online institutions in specific National Education Systems".

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[2] https://www.hesa.ac.uk/support/tools-and-downloads/unistats

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4   A3.1.   Guidelines development for online institutions in specific National Education Systems

4.1   Introduction

In this section we present guidelines intended to help online institutions to improve the quality of their online teaching and learning processes. The goal of these guidelines is to foster European leadership in online education rankings by enabling European institutions to deliver high quality online educational experiences for their students.

The guidelines include general guidelines intended to be useful for a range of educational contexts. These general guidelines are complemented by examples of specific guidelines for one or more of the three particular national educational contexts described in section 3 i.e. the UK, Spain and Italy. Readers interested in other national contexts may use these descriptions to identify similarities to their context of interest. Doing so should enable adaptation of the guidelines so as to be appropriate to the context of interest.

The general and national guidelines are structured according to the quality criteria developed by the CODUR project (Pozzi et al., 2018). However because our focus is on improvement of online teaching and learning processes, we have omitted one criterion, i.e. "reputation/impact". We have omitted this criterion for two reasons.

   i.   Because improvements in teaching and learning processes will lead to an improvement in reputation/impact.
   ii.   Because the indicators for this criterion are applicable to universities using any teaching and learning modality, not just online universities. Institutions can therefore avail themselves of guidance from other sources to ensure the quality of their own performance in this area.

The following subsections present guidelines illustrating how institutions can improve the quality of their provision with respect to each of the other criteria described by Pozzi et al. (Pozzi et al., 2018)[3] , i.e. criteria for quality of teaching and learning, student support, teacher support, research, organisation, sustainability, and technological infrastructure respectively.

In these guidelines reference to the characteristics of the Italian, Spanish and UK HE context are made where appropriate e.g. publicly available data sources such as results from the National Student Survey (UK) or as data collected by MIUR, ANVUR, and Almalaurea (Italy).

The guidelines draw on findings from relevant research studies and projects such as EMPOWER and E-xcellence. The E-xcellence suite of projects (2005 – 2012) developed a methodology and supporting resources for the quality assurance of e-learning in higher education. One outcome from the E-xcellence projects is the publication of a manual for assuring and enhancing quality in e-learning: "Quality Assessment for E-learning: a Benchmarking Approach" (Kear et al., 2016). The guidance and support provided in this document is eminently suitable for application within the CODUR project for several reasons. Firstly, it provides guidance on all of the CODUR criteria of interest. Secondly, it can be used to focus discussion during self-evaluation and review, and to act as an introduction to the key issues an institution faces when introducing e-learning (Rosewell, Kear, Williams, Rodrigo, & Sánchez-Elvira, 2017), thus making it applicable to a range of institutions (as evidenced by the variety of organisations to have achieved E-xcellence certification

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[3]Except reputation/impact for reasons described in the preceding paragraph.

(European Association of Distance Teaching Universities, 2018)). Thirdly, the guidelines are mostly phrased in high-level terms, which should mean that they remain valid even as technology and pedagogy evolves.

For these reasons, we have incorporated the guidelines developed by Kear et al. (2016) into the CODUR guidelines. In the following guidelines, any guideline section which includes "Kear et al. (2016)" in the title is Kear et al's work. In contrast, guidelines which do not include "Kear et al. (2016)" in the title emanate from the CODUR project.

4.2 Guidelines for criterion 1: quality of teaching & learning

The CODUR indicators for the teaching and learning criterion are as follows (Pozzi et al., 2018, p. 21).

- Student satisfaction of the overall learning experience (obtained, for example, from student surveys)
- Student satisfaction regarding adequacy of the adopted pedagogical approaches to the learning objectives (through student survey)
- Institutional support for learning design (in terms of tools, formats, etc.) (data provided by the institution)
- Percentage of courses that propose personalized paths to reach the learning objectives (for example offering different materials/activities depending on culture, learning style, background, etc.) (data provided by the institution or review by external panel)
- Student satisfaction regarding learning materials (through student survey).
- Percentage of courses/examinations that make use of diverse forms of assessment (quantitative and qualitative approaches, human-based and technology-based tools, etc.) (data provided by the institution or review by external panel).
- Student and teacher satisfaction regarding performance reports (through student and teacher survey).

Guideline 1   Curriculum design   (Kear et al., 2016)

An important aspect of the quality of e-learning is concerned with the design of the curriculum. It is assumed that curriculum design is broadly constrained by expectations or requirements about the knowledge, skills and professional outcomes-based curriculum elements; these may be set at national, European and/or international levels.

The major challenge that institutions face is that of designing curricula that combines the flexibility with respect to time and place of study offered by e-learning without compromising skills development or the sense of academic community that has traditionally been associated with campus based provision. Key challenges and opportunities include: programme modularity, online assessment methods, building online academic communities, integration of knowledge and skills development, and offering personalised learning to meet different learning needs and aspirations.

Curriculum design should address the needs of the target audience for e-learning programmes that, in the context of growing emphasis on lifelong learning, may differ significantly in prior experience, interest and motivation from the traditional young adult entrant to conventional universities.

Guideline 1.1   Flexibility   (Kear et al., 2016)

E-learning offers the opportunity to provide flexibility in the time, place and pace of learning. The presentation of content can be more flexible and the didactic approach more open.

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There is also potential for more personalised pathways, both at the macro level of modular curricula and the micro level of alternative material within a module. When e-learning is integrated with other study modes, providers need to demonstrate that students can extract the maximum benefit from the flexibility offered.

Institutions need to have clear policies and practices for scheduling programmes and courses. These policies should take due account of student requirements for flexibility in time and place of study.

Flexibility in registration requirements can foster the inclusion of lifelong learners, for example by validating prior knowledge and experience as alternatives to formal educational qualifications. It may be possible to dispense with formal prerequisites and have open entry, as is the case with MOOCs and some long-established open universities.

The impact of these policies and procedures on course and programme completion, skills development and the development of student communities should be considered.

Institutions should identify and analyse patterns of usage and use these to inform policies on flexibility.

Guideline 1 1.1 Time and pace

The 24x7 access to computer network systems commonplace in the commercial world is a feature that facilitates flexibility. Flexibility at the macro and micro levels must be addressed in programme design.

At the macro level students may have the flexibility to start and complete courses and programmes to schedules of their own choosing.

At the micro level e-learning offers the possibility for students to work to flexible timetables of their own choosing within a cohort of students progressing through the course or programme to overall schedules established by the institution.

In curriculum design the focus is usually on the macro level with the presumption that the detail relating to course materials design and delivery system availability will be implemented to maximise micro level flexibility.

While conventional annual or semester-based cycles of course provision may not be appropriate for students on e-learning programmes, the scheduling of courses with no fixed start or finish times is not necessarily educationally effective or desirable. Fixed start and finish dates for modules constrain student flexibility but facilitate the management of student cohorts and allow for participation in group activity.

Fixed times for submission of assignments provide target dates for task completion which help to maintain pacing and engagement. Similarly, synchronous online events can provide a structure analogous to the lecture or seminar schedule of a face-to-face programme. However, strict scheduling may place significant restrictions on the flexibility required by students facing pressures from family or employment obligations. It may be beneficial to offer alternative schedules, and even alternative exam dates.

Catalan context: In bilingual contexts, e-learning offers the opportunity to provide flexibility not only in regards to the pace, the time, and the place of learning, but also in regards to the language. Institutions need to have clear policies on their language/s of communication. One viable strategy consist in offering two courses with the same content, one in each language.

Guideline 1 1.2 Place

E-learning programmes should offer learners considerable flexibility in the place of study, with the optimum being the full provision of learning facilities via any internet access point including the use of mobile devices.

The institution may operate a network of study centres to provide elements of e-learning on an intranet basis (e.g. for reasons of limited domestic bandwidth, software licensing or specialist video conference services). Attendance may also be required for assessments where it is important to verify the student's identity. The requirement for attendance at such centres should be clearly recognised as placing a restriction on student flexibility. Attendance requirements should be made clear to students prior to registration.

Provision of aspects of the curriculum that require access to specialist facilities such as laboratories and direct face-to-face contact may prevent institutions offering programmes fully online. In these circumstances blended provision is the only practicable mechanism. Attendance requirements must be clearly explained to students prior to registration.

A major issue for curriculum designers is how to schedule activities that are restricted in place. Designers may choose to aggregate face-to-face activities in a small number of modules within a programme with the result that these modules require similar levels of attendance to conventional provision. Alternatively, curriculum designers may distribute the activities so that the majority of modules have a limited requirement for attendance. If possible, alternative dates should be provided.

It is envisaged that institutions will address issues of eligibility for study by virtue of place of residence at national, European Education Area and broader international presentation and will have adequate policies relating to rights issues, fee levels, examination arrangements etc.

Institutions should make every effort to be aware of the national policies regarding recognition of qualifications gained by eLearning in territories from which they accept student registrations and to advise students of the status their qualification carries.
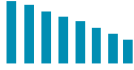
Guideline 1 1.3   Blended learning

Most e-learning is likely to take place in conjunction with other forms of learning either face-to-face or using more traditional distance methods. As in other aspects of flexibility there are macro and micro dimensions. At macro level combining e-learning and face-to-face modules provides a coarse grained blend; at micro level a single module may integrate e-learning and face-to-face teaching.

Curriculum designers must consider what the optimum mixture of online and traditional approaches should be in particular contexts.

The mixture may depend on several factors, such as actual distance (time and place) between student and teacher, the nature of the learning outcomes, skills acquisition, modes of assessment, available technology, etc.

The institution may offer students the opportunity to blend their learning by offering equivalent course modules through different modes of delivery. For example, a student may choose to study the preliminary parts of a programme through e-learning but choose to attend campus based courses for the remainder in order to access specialist resources. Alternatively, there may be benefits in undertaking initial courses on campus to establish a functioning academic community that will maintain its coherence when study changes to an online mode.

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Consistency in module size, together with clearly stated learning and skills development outcomes, will assist students in the selection of programmes and study modes that best suit their requirements.

Blended learning within a module may be achieved through provision of conventional teaching sessions supporting e-learning materials. Whether face-to-face contact is provided directly or delivered through synchronous technologies such as online conferencing or video conferencing may be dependent on student distribution and prevailing technology infrastructure.

Flipped learning offers a similar approach. Here students no longer acquire content knowledge by attendance at a traditional lecture but through independent study, reserving teacher-student contact time for more interactive sessions such as seminar discussion or problem-solving classes. The flipped approach is a natural fit with blended learning, where the independent study can be online using the VLE or the internet (including OER and MOOCs) and the teacher-led sessions can be face to face.

There should be clarity in the level of engagement expected for the different elements of the blend; for example participation in an online conference may be mandatory in order to demonstrate participation in a collaborative activity. For other elements participation may be beneficial but optional.

Guideline 1 1.4   Modularity

Appropriately designed and implemented modular programmes enable institutions to offer their students a broad curriculum and optimise utilisation of resources. Offering short and flexible elements or courses allows students to build a programme to meet their needs.

The institution should adopt a structure for programme and course sizes that is consistent with national and European norms and aligns with systems for credit accumulation and transfer. This should be based on student workloads (expressed in notional study time) and the conversion rate into credit points should be widely understood.

Clearly stated learning outcomes are an important component of modular systems, enabling both academics and the student community to gain an overview of module coverage and establish the relationships and interdependencies between modules.

The costs of e-learning development dictate that many institutions will seek to work in institutional consortia for curriculum development. Under these circumstances agreement over modular structures at programme and course levels is imperative.

Guideline 1 1.5   Credit transfer

Credit transfer between programmes within an institution and more broadly between institutions and across national boundaries contributes to the flexibility offered to e-learning students. Virtual mobility programmes provide another way of offering greater flexibility to students.

Policies on credit transfer and the technical features of credit systems should be applied to e-learning programmes in the same way as for other modes of provision. These need to be aligned to national and European systems for credit recognition and transfer.

Curriculum designers need to be clear about definitions of credit and credit value, workload measures, credit levels, qualification requirements, learning outcomes, generic skills development, assessment criteria, etc. Each of these factors will impact on the policy for credit transfer into and out of the programme.

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Guideline 1.2   Academic community development (Kear et al., 2016)

Participation in a scholarly community that values the exchange of knowledge and ideas is an essential component of higher education. Institutions presenting e-learning programmes should therefore design their curricula to foster broad participation in online academic communities.

In some instances participation is explicit through student (and staff) contributions to online group activities designed as components of the curriculum. In other instances it is implicit through scholarly social interaction face-to-face (where possible) and in online communication environments. To provide parity of experience between traditional forms of higher education and provision primarily delivered through e-learning, institutions should address the issue of formal and informal community building online.

Three aspects of community development may be identified to which curriculum design needs to be sensitive. Firstly, a general academic community is required by all departments and divisions of the institution to provide a framework for student-teacher and student-student interactions. Secondly, communities may need to be established to fulfil a specific academic objective, such as participation in research activity. Thirdly, communities may be established to link students with broader professional communities.

Policies for curriculum design should consider the knowledge and skills required by national and European award structures, identifying those elements in which collaborative activity is required. Direction should be provided as to how students following e-learning programmes can participate in the broader academic community. Online communication is likely to play a major role in this provision.

Participation in online learning communities offers many benefits to e-learners, as well as to teachers and educational institutions. Examples of potential benefits include:

- Convenience and flexibility, particularly for learners who are physically separated and/or studying part-time.
- Development of a sense of course community: feelings of engagement and belonging.
- Increased motivation, leading to enhanced retention and progression.
- Learning with others: interactive and collaborative learning.
- Opportunities for peer feedback and peer assessment (e.g. via forums, wikis, blogs).
- Experience of team working online (e.g. via videoconferencing, forums, wikis).
- Development of interpersonal and communication skills for an online context.
- Opportunities to make students' work more visible and sharable (e.g. via a wiki or social media).
- The ability to collect and share evidence of skills development (e.g. via an e-portfolio).
- Online sharing of resources (e.g. via social media, social bookmarking tools or wikis).
- Support and membership of alumni communities.

However, online communities also present a number of challenges. Examples include:

- Feelings of impersonality: this can lead to low participation in collaborative activities or team work, particularly if the activities are not part of course assessment.

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- Behaviour online: disagreements, misunderstandings and flaming can occur.
- Managing students' expectations of response and support by teachers: students need to develop as self-regulated learners, with reduced dependence on teachers.
- Teachers need to develop new skills and approaches: to become facilitators rather than the holders of knowledge; to develop skills in online moderation.
- Assessment of students' online collaborative work: assessment needs to be motivating and also fair (particularly in relation to group work).
- Workload for teachers in supporting students online and marking students' collaborative work.
- Managing the boundaries between social and academic interactions: this is a particular issue if social media such as Facebook are used.
- Usability issues in online environments: students and teachers can experience problems navigating and learning to use the tools offered.
- Information overload, particularly in large or very active online spaces: online communication should not overwhelm students or dominate their time.
- Minimising collusion and plagiarism via online environments.
- Technical aspects such as connectivity, firewalls, reliability, availability and security in relation to online spaces, particularly if used for assessment.
- Legal issues such as data protection and copyright.

Teachers may participate in online teachers' communities as part of their professional development, gaining similar benefits.

Guideline 1 2.1   Student-student and student-teacher communication

E-learning offers modern ways of building communities and supporting communication between teachers and students, and between students and their peers. Interactions between student and teacher and among students are key components of eLearning in a higher education context. Since content can now be delivered direct to the student rather than via the teacher, it should be a principle of curriculum design to embed prompts that encourage online contact between the participants in the teaching-learning process.

If student-student interaction is required for a specific teaching and learning function (e.g. to provide for the development of effective team working skills), curriculum designers should establish the requirement in programme specifications and ensure that the responsibility for teaching and assessing these skills is allocated appropriately between courses in the programme.

Students should be informed of those peer interactions (for example, engagement in online discussions or teamwork) that are essential to successful completion of a programme. Measures should be in place to ensure that such interactions are appropriately monitored and assessed.

Structuring remote student-student contact for discussion presents significant challenges but the institution should be supportive of the formation of online discussion groups.

The institution may work with student groups and associations in fostering online student groups that operate independently of programme structures. These groups may have a

subject, professional or predominantly social focus. They may be supported via the institution's VLE, for example, or via external social media such as Facebook or LinkedIn.

Assessment policy may provide a structure for one-to-one contact between teacher and individual students. The role of the teacher as the leader of a student group allows the teacher to act as a focal point for student discussion. However, teachers need to be careful not to dominate online discussions, as this will inhibit student input. Skilful moderating requires a balance between encouraging discussions and allowing students the space to take their own initiative online and support each other.

Either teachers or experienced students may be allocated the role of moderating student discussion areas. In either case it is important to ensure that appropriate levels of online etiquette (netiquette) prevail and that there are no instances of collusion among students in relation to assessment.

Electronic forums for interchange of experience amongst teaching staff provide important mechanisms for staff development through exchange of good practice, sharing of teaching resources, and general peer support.

A feature of online discussion is that interactions can be recorded and made available to others; this is clearly the case for forums but is also possible with synchronous communication such as chat and audio conferencing. It should be clear to all involved in online interactions how the digital record may be used or shared with others.

Guideline 1 2.2   Connectivity with non-campus professionals and professions

Programmes that are professional or vocational in nature may traditionally require students to spend some part of their study on placement activities in a professional organisation. Designers of eLearning programmes should explore how they might manage this requirement, particularly taking account that many e-learners will already be in employment.

Institutions may adhere to conventional policies requiring students to be embedded in an organisation selected by the institution. Alternatively, they may develop modes of work-based assessment that relate to their students' current employment and allow for negotiation with their employers.

There are significant potential difficulties in the negotiation and management of placement arrangements for institutions intending to operate across a broad geographic territory or national boundaries. The possibility of virtual placements, where the student participates remotely in authentic activity in a professional setting by using communications technology, could offer a solution.

Less formal community building with the professional sector may be achieved through structured links to professional body websites, jointly developed online events, etc.

Guideline 1 2.3   Research involvement

Development of research skills and participation in individual or group research activity is a requirement of national and European qualification structures at degree level. Institutions offering programmes delivered through e-learning must be able to demonstrate that these skills can be delivered and assessed using online technologies.

Access to library facilities now seldom presents problems for students studying remotely, and web based research forms the backbone of many conventional research projects. Access to laboratory facilities poses greater problems but developments such as virtual labs, hardware simulators, and remote access to real machines make it possible to carry out

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authentic practical work from a distance. Also, it should be recognised that many students choosing to study remotely by e-learning may be studying for professional reasons and be in a position to undertake research activity related to their full-time employment. Co-location is not essential for data analysis and there are many examples of major European research projects that operate with distributed teams; hence there is no reason why research students must be campus based. Online students may contribute to the work of campus-based research groups, possibly participating in meetings using desktop video and audio conferencing methods.

Curriculum frameworks should facilitate a broad interpretation of how research skills may be developed and not restrict the definition to focus solely on traditional campus-based research activity.

Curriculum design should address the placement of research modules in programmes, taking due account of the skills and independence that will be demanded of students in conducting research remote from day-to-day contact with supervisors.

Research supervisors may require new skills to transfer their supervisory experience to an online context. Staff development programmes, appropriate online tools and practical exemplars of their use should be available to support this transition.

Institutional policies regarding the publication and attribution of the outcomes of research should be reviewed to ensure that they adequately address issues associated with the intellectual property in contributions of e-learning students.

Online spaces such as blogs and wikis provide natural dissemination and publication routes for students undertaking eLearning. Publication within a closed online community associated with a programme or subject area will facilitate the development of a community of researchers and encourage a culture of supportive critique and review. This may then lead to more public dissemination via open areas on the web.

Guideline 1.3   Knowledge and skills   (Kear et al., 2016)

Curriculum design should ensure that the curriculum covers those aspects of knowledge and skills required of graduates in the domain under consideration.

Issues specific to e-learning are those of whether skills can be developed uniformly across all courses in a programme or whether there is a need to adjust programme structure as the mode of delivery demands some partitioning of skills and knowledge acquisition.

There remain issues of whether delivery of some aspects of skills acquisition can be achieved using e-learning technologies. In this domain institutions have a responsibility to demonstrate to their students and to regulatory bodies and employers that the delivery of skills and their assessment are valid and effective.

Guideline 1 3.1   Transferable skills

An essential aspect of higher education programmes has always been the development of a suite of core transferable skills that relate to literacy, numeracy, critical analysis, presentation and communication. These skills are highly valued by employers who may regard them as of equal if not greater importance than the subject knowledge that graduates take with them to the world of employment. To these traditional skills must be added e-skills or digital competencies: those literacy, information literacy, communication and organisational skills that apply to conducting professional life online.

Institutions offering e-learning programmes have a responsibility to provide these skills for their students and to demonstrate their provision and effective assessment to potential

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employers. Students should have the opportunity to demonstrate the skills they have acquired in operating in the online domain.

A key element in curriculum and programme design is the clear definition of learning outcomes and skills to be acquired at various stages. Curriculum designers should identify a logical progression of skills development and allocate responsibility for delivery and assessment of skills to courses in a programme.

Skills prerequisites may be as important as knowledge prerequisites in determining progression between courses in a programme.

The institution may need to develop specific assessment methods to verify skills acquisition. One approach is to support students in recording evidence of skills acquisition via an e-portfolio system.

Digital badges are a way of recognising skills and achievements outside formal assessment. They are therefore particularly suited to recognition of key skills that are taught and developed by support units, for example library or digital literacy skills, or other non-formal settings. Badges could also be used to record extracurricular achievements. Badges validated by an institution should have value to employers and as a visible record of achievement fit well with an e-portfolio approach.

Catalan context: The "Catalan university employment opportunity survey" provides universities with information on the employment opportunities for graduates in Catalonia. This allows Catalan universities to adapt their learning proposal to the core transferable skills on demand by employers.

Guideline 1 3.2 Professional and vocational

The curriculum should offer students the opportunity to understand how the content and skills in their modules relate to those used by professionals (including researchers) in their occupation. The development of professional and vocational skills should align with the expectations of professional bodies and employers.

Many students pursuing e-learning programmes may already be in employment, and institutions should make positive efforts to provide recognition for the professional skills and knowledge already held by their students.

Professional bodies may adopt a conservative approach to the potential of e-learning for provision of professional skills, and institutions may need to pay particular attention to ensure that their curricula develop and assess these skills, and that this is apparent to all.

Curriculum design may allocate responsibility for development of professional skills to specific modules. These may address professional skills development in a blended learning format or even require attendance for the full duration of the module.

Virtual internships in companies can be developed that can represent an added value for alumni when entering the labour market.

Guideline 1.4 Assessment procedures (Kear et al., 2016)

It should be the goal of all institutions engaged in e-learning to develop and implement assessment systems that are recognised as at least being equivalent to those used in conventional systems regarding their effectiveness and integrity.

Assessment should include both formative and summative elements. Formative assessment provides feedback to students; summative assessment contributes to their course result. Individual items of assessment may fulfil either or both functions.

Curriculum designers should address all the intended learning outcomes for a programme and ensure that there is an overall strategy for their assessment that reflects the diversity of the modes of knowledge and skills acquisition.

Guideline 1 4.1   Formative assessment

The goal of formative assessment is to monitor student learning and provide ongoing feedback that can be used by students to improve their learning, helping them to identify their strengths and weaknesses and target areas that need work. It can also help academics to recognise and address problems more easily.

Formative assessment can take a variety of forms ranging from voluntary online self-assessment tests with built-in feedback to more formal items of assessment. Formative assignments typically do not contribute to the student's final grade. However, more formal items may include a summative assessment role, but also demand individualised feedback from a tutor or examiner through which a student can judge their progress and reflect on their further learning.

The role of formative assessment in e-learning curricula is a crucial one in overcoming the limitations imposed by independent learning. Curriculum designers need to exploit the opportunities offered by e-learning platforms to provide feedback to students and to allow assessment of progress at regular intervals.

New technologies offer opportunities for formative peer assessment (peer review). Online communication tools such as forums, wikis and social media can be used by students to view each other's work (perhaps in draft form) and provide constructive feedback. This feedback can be used by students to improve their work prior to final submission. Students will need guidance on how to provide constructive critical feedback to each other. Without such guidance, student feedback is unlikely to be sufficiently in-depth to help others.

Self-assessment and reflection can be valuable in helping students to improve their own work and develop as self-regulated learners. Again this will need support and guidance; a structured framework for self and peer-assessment will help students to develop skills and effective practice.

Virtual Learning Environments incorporate quiz engines for automatic marking of an increasingly sophisticated range of question types. Provision of instant feedback according to student response can offer an effective mechanism for integrating formative assessment. Structuring questions and feedback may require considerable time and intellectual effort but will enrich the student learning experience.

Academics may need significant support in the design and development of learning activities, such as online formative assessments, that fully exploit the potential offered by VLEs.

Guideline 1 4.2   Summative assessment

Summative assessment is aimed at awarding a grade or mark to the student. These grades determine whether the student progresses to the next stage of a programme or gains an award on completion.

Procedures for summative assessment need to be:

• Explicit: the requirements for successful completion of the assessment item and the criteria by which marks are allocated should be clear to students and examiners alike.

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- Fair: the nature of the assessment should not favour or disadvantage any particular student or group of students.

- Valid: the assessment should be an effective test of the achievement of the particular learning or skills outcomes under consideration.

- Reliable: the procedures for assessing performance and allocating marks should be internally consistent - with respect to time, place, and the markers involved.

- Plural: not over-reliant on one particular form of assessment.

Assessment judgements should be exercised collectively, as far as possible. Where e-learning programmes involve the participation of examiners at widely dispersed geographical locations, measures should be put in place to ensure that agreed marking criteria are being adopted consistently. This may involve workshops (physical or virtual) for training and dissemination of good practice, and might also involve some form of second-marking between examiners. External moderation of summative assessments and their outcomes is regarded as good practice, and e-learning curricula generally lend themselves well to external moderation.

Particular care needs to be exercised in online summative assessments to ensure that the work submitted for assessment is that of the registered candidate for the award. Cheating can take the form of impersonation for a written examination or plagiarism of another's work in essays or assignments. Plagiarism can mean unattributed copying from third-party material; the copying of material from the web is a particular issue in e-learning contexts. Computer software is now routinely used to check for possible plagiarism and collusion. Preventing impersonation online is more difficult, and for this reason many e-learning programmes require candidates to attend a registered examination centre to undertake written examinations.

Student behaviour codes should specifically address plagiarism and state clearly the institutional policy and the sanctions applied when they are breached. Study skills development on good academic practice such as correct referencing will help students avoid inadvertent plagiarism.

It is good practice to identify and analyse cases of significant discrepancy between an individual student's performance on different forms of assessment.

New technologies offer opportunities for assessment through student creation of non-traditional media such as video, audio, presentations or websites. Assessment of these new media products entails both technical and educational challenges for institutions.

Technologies also offer possibilities for the assessment of collaborative group work, and in particular for assessing the process of the collaboration, as well as the product. If students undertake their collaborative work via forums or wikis, for example, there is a record of the interactions between students, and this can be reviewed in order to assign marks fairly for the collaborative process.

Assessing online collaboration will encourage students to participate in the collaborative activities, and is therefore recommended practice. However, designing assessment for collaborative work can be problematic. The assessment methods need to encourage active participation and genuine collaboration, rather than a 'performance' by students which is simply aimed at meeting the assessment requirements.

Peer review, supported by communication technologies, can contribute to summative assessment. For example, students can be required to review each other's work and can be

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given marks for the quality of the reviews they provide. Marks can also be given for how students make use of the reviews they receive, in order to make improvements. True summative peer assessment can also be used, but this requires some care and oversight by teaching staff.

Guideline 2   Course design   (Kear et al., 2016)

The course design process should demonstrate a rational progression: the need for the course within the overall curriculum should first be established; then a conceptual framework for the course should be designed, followed by the detailed development of course materials.

Each course should include a clear statement of the learning outcomes to be achieved on successful completion. These outcomes will be specified in terms of knowledge, skills, vocational/professional competencies and personal development

The development of each course should include a clearly documented course specification which sets out the relationship between learning goals/outcomes, teaching and learning activities and assessment methods. A course may include a blend of elearning and face-to-face elements; attention should be paid to the appropriateness of assessment methods, the levels of interactivity and the provision of adequate feedback.

Aspects of course design and implementation may be delegated to an outside agency (a consortium partner, commercial developer or through use of OER). However, the parent institution should retain oversight and responsibility.

Guideline 2.1   Educational strategy

Decisions about the use of e-learning should be made on the basis of providing the most effective means of achieving the learning outcomes in particular contexts. There should be a clear rationale for the use of e-learning and the level of support provided.

E-learning provides tools to support a range of educational modes:

- highly efficient text and interactive media distribution to serve didactic approaches;
- resource rich environments for investigative and problem based learning;
- collaborative working environments for dialogue-centred learning processes and group projects.

It is expected that learning design choices will vary with the subject and level of courses. An e-learning institution should provide for a diversity of educational approaches in its offering.

Learning design must resolve the tension between the ease of access offered by the anywhere, anytime availability of online learning materials and the individualised interaction offered by direct face-to-face contact with teachers.

Guideline 2 1.1   Educational approach

Establishing an appropriate educational approach is a key stage in course design. Those undertaking this task should address how the e-learning methodologies available to them can best be used to assemble a learning model appropriate to the level and subject domain of the course.

Three broad educational approaches make differing demands on the capabilities of e-learning systems:

- Didactic learning: efficient delivery of structured teaching materials, embedded testing and automated feedback can be achieved online, allowing for flexible pace of study by independent learners working to self-determined schedules.
- Resource based learning: online learning can provide access to information resources that are on a par with campus based access.
- Collaborative learning: various online social media tools can be used for online collaborative learning. Their use may, however, place constraints on flexibility of study and will require appropriate academic oversight.

The majority of courses will utilise several educational approaches to secure their learning outcomes. The use of different types of eLearning and levels of support needs to be fit for purpose.

Guideline 2 1.2   Blended learning models

The earlier guidelines about Curriculum design addressed blended learning in relation to structuring a broad approach to the curriculum. Similar factors apply at a finer granularity in applying a blended approach to course/module design.

The educational approach currently referred to as blended learning involves the use of a number of media for curriculum delivery and student support. For example, students may study eLearning materials but also attend face-to-face sessions to facilitate academic community building and to help develop interpersonal and practical skills.

The rationale for the blend should be clearly communicated to students in course documentation.

Guideline 2 1.3   Roles of tutors and mentors in e-learning

Depending on the scale of an e-learning or blended learning programme, tutors/mentors may undertake a vital teaching support role that differs somewhat from that of a conventional traditional classroom teacher. It is frequently asserted that support by a tutor is a key factor in achieving high student satisfaction and low drop-out rates.

Availability to respond to online questions in a timely fashion may require support from a team rather than an individual. Students and tutors/mentors should be aware of the institutional policy and practice on response time to online questions.

At the educational design phase, course designers must define the roles that will be undertaken by those responsible for provision of online support. In a mature e-learning institution these roles will be well defined and course designers will have a number of options available to them, suited to differing levels and subject domains.

How to provide support in a MOOC is a particular challenge since MOOCs are designed to be delivered at large scale and so must support large numbers of participants with restricted input from the lead academics. The use of moderators or mentors to monitor online forums, answer routine queries and escalate others to the course leader, is one way of handling large numbers. The mentor may be a student who has already completed the course and is studying at a higher level rather than a member of academic staff.

A number of communication routes may be used for providing support and feedback to students, and there will be recognised mechanisms to initiate contact between tutor and student. Communication routes may be both synchronous and asynchronous.

Guideline 2 1.4   Independent learning materials

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The use of learning materials designed for independent study offers learners significant flexibility in time and place of study. Their use aligns with changing patterns of student centred study and equipping graduates with the skills to become self-directed learners throughout their professional lives.

Independent learning materials may be used to provide the essential core learning of the course but may also offer a valuable mechanism to provide additional support in topics that may be desirable, rather than essential prerequisite knowledge for a course.

Independent learning materials may be designed to serve the needs of several courses or programmes; such packages should therefore be self-contained, have clear learning objectives and measurable outcomes.

When delivered by e-learning the materials should be designed to maximise the use of interactive techniques to provide opportunity for student self-assessment of progress towards learning outcomes.

The availability of readily accessible resources, e.g. repositories of Open Educational Resources (OER), MOOCs or other third-party material, enables institutions to augment their own inventory of independent learning materials and provide their students with a wide range of independent learning materials.

Course designers should establish the extent to which they will exploit the availability of OER and other independent learning materials.

Guideline 2.2   The course design process

The course design process should demonstrate a rational progression from establishing the need for the course within the overall curriculum, through the design of a conceptual framework to the detailed development and production of course materials.

The learning design for the course should take into account the student context and study mode and identify the methodologies to be deployed.

Each course should include a clear statement of the learning outcomes to be achieved on successful completion. These outcomes will be specified in terms of knowledge and skills, integrated into vocational/professional competencies and personal development. The development of each course should include a clearly documented course specification which sets out the relationship between learning outcomes and their assessment.

The design of an e-learning course may be subcontracted to an outside agency (e.g. a consortium partner, a commercial eLearning developer) or Open Educational Resources (OER) from an external repository may be used. However, responsibility remains with the awarding institution and arrangements must be made for evaluation, modification and enhancement.

Guideline 2 2.1   Relationship with curriculum

The course should be designed to fulfil a clear role in the institution's curriculum and the learner's overall programme, with clear statements of its learning outcomes in terms of knowledge and skills acquisition, and the development of competencies.

If the course fulfils a role in more than one programme the dependencies that may affect student knowledge and skills in all these programmes should be clearly identified.

An institutional curriculum map or programme guide provides information on the role and goals of each course offered by the institution.

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Guideline 2 2.2   Concept and specification

During this phase, course designers will define:

- the coverage of the course;
- any prerequisite knowledge;
- the key instructional techniques that will be used;
- the likely methods required for assessment;
- the subject expertise required by teaching staff;
- the professional skills required by course development staff;
- an indication of the required study time.

The output from this phase of activity is an outline specification of the course. This may represent a critical step in an institution's course approval and resource allocation process.

Statements of knowledge and skills prerequisites are an important component of the specification, particularly in institutions and consortia constructing modular programmes.

Dependent on the scope and size of the course, authoring roles will be allocated to specific authors and media professionals may be commissioned to contribute to the development of course materials. The authoring specification will indicate the outcomes expected.

Mechanisms for acquiring feedback from learners and other stakeholders also need to be planned at this stage.

Guideline 2 2.3   Learning and content design

Student interaction with course material is a key factor in eLearning. Design of course content should aim to deliver outcomes via a balanced use of e-learning media, online support facilities and (in the case of courses employing a blended learning approach) other teaching media.

In particular, content should:

- be relevant, appropriate and clearly presented
- build on and reinforce prerequisite concepts and skills
- introduce, assess and reinforce new concepts and skills
- be logically structured and sequenced
- incorporate interaction (student-content and student-student).

Course designers will match their use of the media and delivery modes available to them to the course outcomes identified in the analytical phase. There are tools available to support the learning design process and the sharing of learning designs with colleagues.

Course designers develop content that allows for educational and subject updating.

Guideline 2.3   Materials and production design

The processes employed in the design and development of course materials can have a major impact on their teaching effectiveness.

Development of a course may be a significant media and software development project and demands the application of project management techniques. These may be applied during initial course design, but are particularly important during the materials production phase.

Inputs from several professions are desirable for the development of high quality e-learning materials. Effective interaction between key professionals is an important performance indicator. Specialists in design of learning materials may be located in an educational

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development unit, library or information services unit dependent on the institutional policy and history.

The increasing availability of Open Educational Resources or other third-party resources provides an alternative to creating materials from scratch. Review of available Open Educational Resources may identify resources that may fully or partially meet the requirements of the course or, dependent on licensing conditions, may be revised to meet them. Improved or newly created resources may be offered back to the OER community, contributing to the wide availability of high quality resources.

Guideline 2 3.1 Technical design

The Institution should provide a framework of technical, accessibility and presentational standards that apply to eLearning materials and systems. These standards should embrace the following factors:

- Interfaces used in the technical design of courses should conform to up-to-date usability and accessibility standards.
- As far as possible, materials should be provided which are accessible to users with special requirements, for example students with a visual impairment or limited manual dexterity. Materials may be provided in alternative formats (for example, transcripts of audio) to cater for different needs.
- Learning materials should have good graphic design standards.
- Materials should be neutral as to sex, ethnicity, age and related issues.
- Software used in courses should be reasonably up-to-date and platform neutral, or alternative versions should be available. Software updates should be easily available to users.
- When creating learning materials to be delivered online, course developers should take into account download times taking due account of the infrastructure available at the point students are likely to use for access.
- Learning materials should be accessible and usable via a variety of devices including mobile devices. Institutional policy may stipulate the types of material that should be accessible via mobile devices, e.g. all course calendars and schedules.
- Stylesheets and schemas should be used in order to provide consistency of presentation format for learners.
- Course developers should be provided with suitable authoring tools and a supportive environment to enable them to make effective use of these tools.

Guideline 2 3.2 User interface

The student user interface is the primary route through which students access learning materials. Poorly designed features of this interface may create irritating barriers to learning achievement.

Where courses are available on a number of device platforms the user interface should retain its major features on all platforms.

From a student perspective the interface should incorporate common features across all the institution's programmes.

Important features are, for example:

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- Elements such as font, text, placement and presentation should be consistent.
- Elements and layout should stimulate the learner's motivation to study the online materials.
- Feedback cues should be available, e.g. the link changes colour when clicked.
- Navigation should be user-friendly: intuitive, consistent, easy and efficient.
- The interface should comply with usability and accessibility requirements.
- Learning materials should be provided in alternative formats where possible.

Guideline 2 3.3   E-learning elements and activities

A course will contain a number of e-learning elements or activities.

In some circumstances, it may be appropriate to design these as reusable learning objects, or to reuse such objects obtained from a repository. Learning objects are focused on a specific learning objective, contain learning content (text, images, video etc.) and possibly (self-)assessment. To be easily reusable they should be accompanied by a metadata description that includes a statement of the learning objective, subject area keywords, copyright information etc.

More commonly, a less formal approach is taken to creating eLearning elements and activities but many of the characteristics listed below will still apply.

Academics should be literate in the use of e-media and aware of technical opportunities and constraints. However, the design and implementation of more sophisticated e-learning elements and activities will require input from media/technical experts. Close collaboration and good communication between these experts and academics contributes significantly to the creation of effective e-learning. It remains the responsibility of academic leaders to rule on matters of teaching and content.

E-learning elements and activities should:

- conform to usability and accessibility standards;
- where appropriate, conform to metadata standards;
- be relevant, accurate, appropriate and clear;
- be designed for regular updating;
- be reviewed periodically to ensure they continue to meet programme standards;
- be appropriately interactive (either student-computer or student-student);
- comply with legal requirements e.g. copyright issues should be identified and documented.

Guideline 2 3.4   Open educational resources

Open Educational Resources (OER) are digital materials offered freely and openly for use and reuse by educators and students. OER can be found through the large institutional and collaborative repositories that now exist.

The intellectual property rights associated with OER (often one of the Creative Commons licences) usually allow material to be used without cost for non-commercial purposes and allow material to be freely reversioned and updated. However, some rights may still be

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reserved, most commonly a requirement that the attribution to the original author should be preserved. Rights must therefore be carefully tracked to ensure that the appropriate level of access is preserved and that authors are credited where appropriate.

A course designer could develop a course by picking existing OER elements (and perhaps customising them as appropriate) rather than developing new material from scratch. The OER elements might range from single images to more extensive learning objects containing learning objectives, content and assessment. The resulting e-learning material should be judged under the same quality criteria as new material or bought-in material. However, an OER obtained from a repository may already have some assurance attached to it. The repository itself may carry some weight of the reputation or brand of an institution, user reviews and voting systems may offer recommendation, or the repository may offer a peer review stage prior to acceptance.

An important benefit of OER is that the licence to freely change material makes it possible to update and improve it, allowing high quality e-learning resources to evolve as users improve content and offer it back to the OER community.

Learning material, either modified from existing OER or created from scratch, may be offered back to the community as further OER. OER therefore have specific quality dimensions relating to reusability and openness in addition to the quality dimensions relating to content discussed above. These include:

- Format: conformance to standards and file formats.
- Localisation: ease of adaptation to other languages, cultures, or contexts.
- Discoverability: metadata, tagging.
- Technological barriers: bandwidth, software requirements.
- Interoperability: ease of reuse in different software environments.
- Accessibility: to users with special needs.
- Digital preservation: likelihood of continuing access over the long-term.

Guideline 2 3.5   Massive open online courses

Massive open online courses (MOOCs) are in a sense a development of open educational resources (OERs). A MOOC offers a full course experience and includes some form of assessment, whereas OER might be a much smaller component. (There is however a trend toward shorter MOOCs since these are more likely to be completed by participants.) The 'open' nature of a MOOC is typically taken to mean both that it is free to the learner and that there are no formal entry requirements. (Unlike OER, MOOC content rarely has an open licence that would allow for reversioning and reuse.) A MOOC is typically run with a defined start and completion dates and therefore has a defined cohort of participants who are offered some student support, although some are offered for study at any time. Successful completion of a MOOC is usually recognised by a certificate of completion rather than formal credit, although formal credit is offered for a minority.

Quality issues for institutions developing for MOOCs are similar to those of other e-learning courses. A specific characteristic is that a MOOC must be designed to scale to large numbers of participants without the quality of the student experience suffering; in practice this means it must scale without a large increase in the load placed on teaching staff. Scaling to large numbers is not a problem to online content delivery, but raises issues for student support and assessment. A limited amount of support from academic staff can be supplemented by using mentors and forum moderators who can answer routine queries, and by encouraging peer support. Peer assessment and automated assessment such as

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multiple choice quizzes will scale to large numbers of students; both may require considerable design effort to deliver reliable and valid assessment.

Some institutions have offered a course in mixed mode: as a conventional for-credit e-learning course for its registered students (possibly with additional support and assessment), and simultaneously to other participants as a not-for-credit MOOC. Registered students may benefit from the knowledge and collaboration brought in by the larger number of participants.

A course or programme taught at one institution could allow students to take a MOOC offered by another institution. If the MOOC has accompanying formal credit, this can be treated as an example of virtual mobility. Alternatively, the home institution could treat the MOOC as OER and provide its own assessment to validate the students' learning.

Guideline 2 3.6 Process management

The materials necessary to support e-learning are varied in nature and there is no single methodology for managing their development. However, there are technical and presentational aspects that increase the complexity of their production beyond that associated with print based materials. The contents of this section present a comprehensive view of processes that may be involved with large-scale production, but in many instances a more agile and flexible management framework will be appropriate.

The processes for producing course material should be well managed and allow for effective collaboration between the professional groups involved. Management of the interface between academic and media/technical experts is a key issue. Institutions should use project management processes appropriate to their circumstances. Materials development projects should be progressed within agreed budgetary frameworks.

In circumstances where a significant proportion of materials production activity is undertaken by external organisations or consortium partners, external partners should be appropriately integrated into the institution's project management process.

Particulars of the project management framework might include:

- Documentation of production processes and roles.
- Clear protocols for the transfer and handover of course materials between professional groups.
- Involvement of and support for all categories of professional staff engaged in materials development and production.
- Clearly established pathways for materials development, allowing for parallel and serial contributions by professional groups and other participants as necessary.
- Clear mapping of dependencies in the production pathways.
- Establishment and use of protocols for version control.
- Templates for contracts where development is subcontracted to external agencies.
- Clearly defined relationships between contributors to consortium arrangements.
- Costing methodologies that reflect the impact of media choice on material and staff costs over the lifetime of the course.

Guideline 2.4 Assessment (Kear et al., 2016)

Student assessment should be considered as an integral part of the design of e-learning. It needs to be considered as part of both curriculum design and course design. See Guideline 1

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4.1 Formative assessment and Guideline 1 4.2 Summative assessment which discuss various types of assessment.

Course designers should plan the process of student assessment as an integral component of a course. They should ensure that the assessment fits the method of delivery and that the total assessment burden is proportionate to the size of the course and its credit rating.

Student work may be marked by peers, teachers or by automated marking processes and these techniques may be used for both continuous and final assessment.

For students following e-learning courses the sequencing of assessments and their schedule forms an important factor in determining student study patterns. The use of formative assessment can be designed to provide points at which students can verify and consolidate their progress towards achievement of learning outcomes. Learning outcomes will be assessed more formally in the summative assessments.

Guideline 2 4.1   Continuous assessment

Students should be fully informed on the nature and function of assessments during the course, their contribution to summative assessment and their relationship to intended learning outcomes.

Teacher feedback on assessments is an essential teaching tool. Teachers should be required to provide timely feedback aimed at improvement. In circumstances where marking responsibilities are devolved to tutors, or in consortium arrangements, marking criteria need to be uniformly understood and consistently applied. Clear marking guides, and online discussion among tutors, will help to achieve this.

Peer and self-review can also be used for formative assessment. Clear marking criteria are needed for this to be a valuable exercise.

E-learning offers opportunities for embedded interactive formative assessment with automated feedback. Development of these assessments requires significant academic input and collaboration with experts in the facilities available through the institution's VLE systems. The benefits to students through rapid feedback are considerable.

Guideline 2 4.2   The examination process

The formal examination has been the cornerstone of assessment in higher education, but it can be argued that it does not provide a true measure of an individual's likely performance in their future profession. Other assessment modes such as portfolio or project based assessment are therefore increasingly used. However, examinations are likely to continue to be used extensively in eLearning courses to reassure stakeholders on matters such as student identity.

Many e-learning courses will require one or more examinations as a component of the summative assessment. In designing examinations, staff should take into account the students' primary (computer-based) mode of learning, and examiners (including external examiners) should bear this in mind. Students should be clearly advised on examination requirements.

The use of e-learning raises issues of verification of student identity, and measures should be taken to prevent impersonation and plagiarism. These measures may include: checking identities at approved examination centres; using software to detect plagiarism and collusion; cross-referencing and correlation between performance on written examinations and on continuous assessment.

Institutions offering programmes internationally should ensure that their mechanisms for verification of identity can be operated in all territories in which they register students.

Guideline 2.5 *Course evaluation and approval* *(Kear et al., 2016)*

Institutions should have in place appropriate structures for the approval and long-term evaluation of courses. Independent evaluation of course design and course materials may be carried out to ensure comparability with national or professional standards. In the case of e-learning courses the evaluation process should address subject content, modes of delivery and levels of interactivity. For example:

- External assessors should be engaged to review course design and provide developmental feedback.

- The monitoring and evaluation process should provide feedback relevant to improvement and redevelopment that course authors can act on.

- Once a course is in presentation, data on patterns of student use may be gathered and analysed, in addition to evaluation information from formal survey activity.

In an e-learning situation there is potential for generation of extensive data on student activity and performance. The systematic use of this data is now known as learning analytics and is of growing importance for quality improvement, including provision of feedback and advice to students or to prompt tutorial interventions. The course design team should devise a strategy for exploiting these information sources and tools.

Course development and presentation schedules should provide sufficient time and resources to implement improvements.

Catalan context: In Catalonia, the Catalan University Quality Assurance Agency (AQU) provides an external evaluation of each official degree. Universities must have their official degrees externally evaluated at least every six years. In this evaluation, AQU considers whether the implementation of the degree matches its original design.

Guideline 3 **Level of detail**

Information from a survey of students may show that a need for improvement for a particular degree course or institution as a whole. However, surveys are unlikely to be detailed enough to identify where improvements to individual modules should be made. Therefore it will be necessary for institutions wishing to improve the quality of their provision to run their own assessments of quality, so as to provide the detail necessary.

UK context: For example, the UK's National Student Survey asks final year students questions about their experience on their course as a whole. There is unlikely to be detail to improve specific elements of a course emanating from such a survey.

Guideline 4 **Survey response level**

Ensure that the number of respondents is as high enough to be representative of the student and/or teacher body so that findings from surveys can be enacted with confidence.

UK context: A threshold of both 10 respondents and a 50% response rate is required for results to be made publicly available on the UNISTATS web site (Office for Students, 2018).

Guideline 5 **Respond to feedback**

Develop a process so that feedback from students is evaluated, appropriate changes are made, and the student and teacher body is informed of the changes and the rationale behind the changes.

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Guideline 6   Changes should be informed by research into online teaching and learning to improve provision

When a need for change is identified, research evidence that relates to the kinds of change being considered should be consulted bore any changes to services are implemented. Any changes that are implemented should be implemented in a way that facilitates their effects to be studied. (See also section 4.5 "Guidelines for criterion 4: quality of research into online teaching and learning".)

Guideline 7   Support the supporters/develop the developers

Appropriate professional development should be in place so as to develop, maintain and enhance the knowledge and skills of staff designing, teaching and supporting students on online courses. See also section 4.4 "Guidelines for criterion 3: quality of teacher support".

Guideline 8   Be wary of indicators that count what can be measured

Be sure to focus on improving the quality of the underlying processes, not merely the elements that are being measured. For example, the presence of particular tools or formats for learning design will not necessarily relate to the production and use of high quality learning designs, if the learning design process itself is not fit-for-purpose.

4.3   Guidelines for criterion 2: quality of student support

The CODUR indicators for the student support criterion are as follows (Pozzi et al., 2018, p. 21).

- Student satisfaction regarding interactions with teachers/tutors (through student survey)
- Student satisfaction with technology support (including Helpdesk, FAQ, wizards, support material and initial training) (through student survey)

In this document we define "Student Support" as

> "all activities beyond the production and delivery of course materials that assist in the progress of students to success in their studies" (Simpson, 2013).

The support services provided by an institution thus entail all those aspects of the university experience other than the specific teaching and learning elements of a course. (Guidelines related to production and delivery of course materials are provided within section 4.2 "Guidelines for criterion 1: quality of teaching & learning ".)

Kear et al. (2016) provide a useful overview that contextualises guidelines that concern student support. Following this overview, there are a number of more specific guidelines from EADTU and the CODUR project.

"Student support services are an essential component of e-learning provision. Students' retention, success and satisfaction are their main objectives.

Institutions should develop policies and strategies for the design and provision of student support services. Although the delivery of student support services may vary between institutions, some aspects of student support should be taken into account in all eLearning programmes.

Summarizing, support services for e-learning students should be designed to cover the pedagogic, technical and administrative aspects that affect the online learner:

- Clear and up-to date information and advice about courses should be provided to enable students to make informed choices.

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- Information and advice about technical and administrative matters should be easily accessible.
- Guidance, resources and activities should be provided to support students on their journey through university, including induction, pastoral support, the development of generic study skills and e-learning skills, and career advice.
- Staffed helpdesk and advisory services should be provided at times appropriate to students' needs.
- Online library services should be provided to e-learning students. Study centres may be appropriate for some courses.
- Students should be supported through online communities.

Quality student support services depend on adequate numbers of professional staff. Students should be provided with identified academic contacts responsible for providing feedback and support. Other supporting roles and services should be also available. " (Kear et al., 2016).

Guideline 9   Student support organization   (Kear et al., 2016)

Organising student support at an institutional level, perhaps as the responsibility of a unit or department, is key to the quality of support that a student receives. This requires a holistic approach with student support planning based on previous analyses of students' needs and demands, taking into account different learner groups and the specific characteristics of lifelong learners. Institutional planning should integrate different types of resources, coordinating staff to give support in academic, technical, administrative, and other relevant areas. Promotion of student success, satisfaction and retention should be the main objectives.

Support services encompass all those aspects of the university experience other than the specific teaching and learning elements of a course. This covers administrative, technical and pastoral aspects, and includes induction, course choice and careers advice. Some generic academic provision can also be considered under this heading, particularly library facilities and support for study skills such as digital literacy. Teaching support is better considered as an aspect of Course Design (see Guideline 2 Course design   (Kear et al., 2016)Course Design), even when a devolved model of teaching is used that uses tutors or mentors.

Guideline 9.1   Institutional student support planning

The institution should have a holistic and proactive approach for the delivery of student support services, developing specific policies and programmes that integrate specialised support units and expertise across the institution.

Guideline 9.2   Support needs for different learner groups

The institution should monitor the needs of its students in order to inform the planning of support services for e-learners. The institution should consider the needs of different learner groups, including prospective and new students, and students with special needs (such as disabled students or those in prison). The demands of each course, and likely prior experience of the students, should be considered. Ways of delivering more personalised support should also be addressed where possible.

Special attention should be paid to offering adequate support to lifelong learners, as many higher education e-learning students are adults with professional and personal responsibilities, who are studying part-time and working to flexible schedules.

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Guideline 10   Support staff   (Kear et al., 2016)

The nature of higher education and the breadth of responsibility that institutions carry for the educational and personal development of their students require significant human intervention, and specialised interventions in programmes that are delivered predominantly through e-learning.

E-learning students should be provided with access to human support delivered online, via telephone and/or face-to-face. The support may be course-specific or generic in nature. The roles may include tutors, mentors, counsellors, librarians and advisors. Institutional policies should define the service standards for this support. The expected level and frequency of academic student-tutor interaction during a course or programme should be made clear to students and staff.

Staff providing student support should have clear job descriptions and access to necessary information sources and training in order to carry out their functions effectively.

Staff need to be aware of the range of support services available and be able to guide students accordingly.

Italian context: Italy's ANVUR (National Agency for the Evaluation of University & Research) considers the ratio between tutors and students as an indicator of quality of online and blended institutions. This indicator is only taken into consideration for institutions in which more of 30% of the courses are online; this highlights how student support is perceived as especially critical when considering online and blended programmes, specifically.

Guideline 10.1   Human resource planning

The requirements for particular types of human interaction and intervention for delivering student support should be part of the institution's planning process, and incorporated within curriculum and course design.

Guideline 10.2   Support role definitions

The institution should have clear definitions of the student support activities conducted by its various categories of staff: academic, technical and administrative.

Where there is a transition to e-learning from either face-to-face teaching or an earlier form of distance learning, the staff roles should be redefined to ensure that they adequately address the requirements for support of e-learners.

Clear information should be provided to students at the start of their course or programme regarding: the support staff resources available; the roles undertaken by different staff; and the levels of support available. Students should be made aware of how often staff will be available online, and how quickly staff will respond to queries. Students' expectations may need to be managed carefully so that they do not demand immediate 24-hour attention online.

Arrangements for the organisation and management of online student groups (e.g. for small group tutorials or for larger discussion groups) need to be clear to both staff and students. Tools should be available for the organisation and management of student groups. It should be clear to staff in what situations their intervention will be required, and this should also be conveyed to students.

Guideline 10.3   Administrative support

The majority of administrative functions can be delivered online. Online systems should cater for: registration on programmes and courses; payments; study timetables; access to

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student records etc. All systems should operate at appropriate levels of security to ensure confidentiality. Online guides to administrative systems should provide students with a clear indication of the services available and how to access them.

Students may require access to human intervention in some aspects of administration when difficulties arise that are not catered for adequately by online systems. There should be mechanisms for appropriate levels of intervention, from routine error correction in records to personal support for major difficulties. In order to improve administrative processes, institutions should monitor the use made by students of access to their records and the occasions when human intervention is required.

Guideline 11   Technical support   (Kear et al., 2016)

Students will expect to use the institution's online learning environment at any time. They may need technical support to do this. Students should be aware of the nature of services available and the means of accessing them.

Guideline 11.1   Online services availability

As e-learning students are likely to adopt flexible study patterns, the technical infrastructure should operate to a 24x7 schedule. This has impact on the technical aspects of operation (maintenance, upgrading, etc.) and on the provision of helpdesk and other advisory services.

Guideline 11.2   Professional management of technical support

The management of the institution's online systems should be the responsibility of professionals, who operate the system to standards equivalent to those in the commercial customer service sector. Comprehensive documentation of operational procedures should be evident; logs and other routine record keeping should demonstrate whether the standards set are being achieved.

Guideline 11.3   Online technical support system availability

Students should be provided with access to a technical helpdesk service. This service should cover both the technical aspects of the online learning system and, wherever possible, any problems that students might encounter with the use of course-specific software.

The provision of technical and helpdesk support should be managed by IT professionals or staff specially trained to deliver technical support to students.

Guideline 12   Pedagogical support   (Kear et al., 2016)

Support for learning is at the core of student support. While studying at university, students are expected to acquire a range of generic transferable or key skills such as numeracy, information literacy, presentation and communication skills. While many learning opportunities may be provided within course teaching, an institution-wide approach to support learning and study skills development brings clear benefits.

E-learning may require students to acquire new skills or adopt new learning techniques. Students should be supported in the development and application of new skills and techniques through a range of mechanisms and services. They should also be supported in developing new approaches to their learning. For example, students should be introduced to the development of self-regulated, active and collaborative learning in blended and online environments.

Students should be informed about the services and resources available to help them to adopt or acquire new learning skills, and how to access these services.

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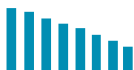
Guideline 12.1   Advice and guidance on study skills development

The provision of relevant pedagogical advice and guidance is an integral part of the course or curriculum planning process, primarily organised to support students.

Students should be informed prior to registration about the skills they will need to develop and the study skills support available to them. Support may be provided through online resources, contact with tutors or mentors who have a specific responsibility to support a particular group of students, or contact with advisory services that may be generic or course-specific.

Support should be provided to help students develop good academic practice in quoting and referencing the work of others. Helping students understand the issues surrounding plagiarism can result in better learning and reduce the burden to the institution of handling plagiarism issues.

Guideline 12.2   Support for e-learning skills development

Though there may be variation in learner needs from subject to subject, there is likely to be a core of common skills development that is required to support learners' development in online environments, for example digital and Information literacy, and skills for online collaborative work.

Different student groups may display differing experience of relevant technologies and learning methods. Although younger students may be more experienced with technology, they will nevertheless need support in using technology to best effect for learning. New students may need targeted support.

Support can be offered through a variety of means: materials and activities such as OER, MOOCs, seminars, online courses, video tutorials, blended-learning courses, etc.

Guideline 13   Support resources   (Kear et al., 2016)

Many aspects of student support can be provided via online access to information and advice resources, materials and services. Since a wide range of support services will be available to students, they will need additional guidance to navigate these; clear information should be provided about what services are available and how to access them.

Resource provision in general is usually managed at an institutional level in order to deliver economies of scale and ensure consistency of provision and dissemination of best practice. Examples include:

- Course choice advice and guidance
- Online library resources
- Resources and systems to facilitate the development of online learner communities.
- Study centres for face-to-face teaching as part of blended provision
- Careers advice.

Guideline 13.1   Course choice advice and guidance

The institution should provide students with clear advice and guidance on course choice prior to registration, taking into account their personal characteristics and time available for study. Students should be provided with clear and up-to-date information, including a full description of the study programme, the variety of learning methods used, and information on how they will be assessed. E-learning students are likely to use online access to investigate programme availability. Curriculum guides and advisory notes should be available to potential students from programme launch.

Curriculum designers should provide guides to their programmes that indicate routes appropriate to students with commonly encountered profiles of prior education and experience.

Modular programmes may be difficult for students to understand at the outset of their studies. The institution should therefore make every effort to help students to construct a programme that addresses their needs.

Guideline 13.2   Library resources

The library service is an aspect of resource provision that is widely available to campus students; extension of the service to online students (via an e-library service) is essential for effective delivery of e-learning. The provision of library resources and any required training in their use is an institutional responsibility. Digital (online) library facilities provide a good solution for e-learners, as well as being useful for campus students and staff.

Guideline 13.3   Learner communities

Creation of online communities of students is important as it reduces the isolation often associated with traditional modes of distance education and encourages social and informal learning. Institutions should identify the online communication activities that are essential to the achievement of course objectives and those that are more social in nature.

Learner communities can stimulate the creation of a sense of community amongst online students, fulfilling a number of academic and social functions particularly giving students the opportunity for mutual support.

Online community spaces, such as discussion forums, allow staff to respond and interact with students. Dialogue between students and staff is an important part of building community in a course context. However, this can require considerable input of staff time. They also provide one way to gather informal feedback on students' experience of a course.

Devolving responsibility for the set up and monitoring of online communities (e.g. to student moderators) is possible, but carries with it risks that require sensitive management.

Online communities may be also formed by students (or staff) on external social media, such as Facebook, Twitter or LinkedIn. Consideration needs to be given to handling any problems that may arise (such as collusion, disagreements among students, privacy issues, blurring of boundaries between social and academic life).

Guideline 13.4   Role of study centres in student support delivery

The primary target for e-learning should be to allow students to interact with course materials, library materials, tutors/mentors and fellow students online, irrespective of location. However, requirements for use of specialist equipment or learning materials, the nature of certain types of tutorial or seminar-type interactions, and the requirement for security of assessment practice may demand the attendance of students face-to-face at study centres.

Institutions may operate a network of study centres which they regard as outposts of the institution and which serve multiple purposes, e.g. regional recruitment and administration centre, local library, teaching centre, assessment centre, etc. Using these study centres for the specific functions noted above should therefore be straightforward. However, pre-existing study centres may require adaptation to meet the needs of e-learning students, depending on the mode of delivery and whether students have online access via their own equipment.

The staff of study centres may be regarded by students as the public face of the university. Induction and training programmes should equip them for this key relationship role, in addition to their primary functions. The study centre may also provide a focus for student community development.

Guideline 14   Evaluate and develop student support

Institutions should continuously monitor students' feedback about the support they receive so as to maintain standards, and develop appropriate resources and practices, e.g. as new technologies are adopted.

4.4   Guidelines for criterion 3: quality of teacher support

The CODUR indicators for the teacher support criterion are as follows (Pozzi et al., 2018, p. 21).

- Teacher/tutor satisfaction with technology support (including Help desk, FAQ, wizards, support material and initial training) (through teacher survey)
- Number of hours of training devoted to teaching staff concerning online learning per year (data provided by the institution)
- Teacher/tutor satisfaction of training opportunities (through teacher survey)
- Teacher/tutor satisfaction with feedback on their courses derived from students' surveys (through teacher survey)

Kear et al. (2016) provide a useful overview that contextualises guidelines that concern support for teachers and other staff. Following this overview, there are a number of more specific guidelines from EADTU and the CODUR project.

"The objective of staff support services is to enable all members of academic, administrative and technical staff to contribute fully to e-learning development and service delivery. Institutional adoption of innovations from the media and technical landscape will trigger the need for specific staff development activities. There is also a need for ongoing dissemination of good practice.

Academic staff need particular support to make the transition from traditional face-to-face teaching to effective teaching using an online environment; this support should encompass both educational and technical aspects without demanding that academics become ICT or media specialists in their own right.

Teaching through eLearning should be acknowledged when managing staff workload. Career development incentives should promote the use of e-learning. It is important to address the needs of both full time and associate staff who may be employed in a number of teaching and administrative roles. " (Kear et al., 2016).

Guideline 15   Technical aspects   (Kear et al., 2016)

Academic and administrative staff working in an e-learning environment may require significant technical support in the acquisition, operation and maintenance of ICT systems. Specialist technical staff should be available to provide support in all technical aspects.

Guideline 15.1   Technical support

All staff should have access to technical support in the use of the e-learning environment and the hardware and software used in teaching. This support should extend to software used for authoring and production, including audio/visual media, and for teaching support, including learning analytics. Support may be provided by a helpdesk service.

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For those working remotely, technical support can be provided online or by telephone. Whilst the institution may not have responsibility for the physical equipment used by those employed in support roles, it should provide access to a comprehensive advisory service to staff that covers technical aspects that might affect the institution's teaching. The use of cloud computing may reduce the need for locally provided technical support.

Within the institution, technical support should be available to all staff and should operate to clear performance levels, bearing in mind the impact that technical problems might have on the capacity of staff to support student learning.

Guideline 15.2   Technical training

Academic, administrative and support staff should have access to appropriate training.

Design of training programmes should be informed by a training needs analysis that identifies training requirements by job function and addresses the needs of existing and newly recruited staff.

Training may be provided by induction programmes on appointment, training programmes associated with the introduction of new systems, updating programmes, online training materials and helpdesk services. Elements of embedded training may be available via the help functions within the VLE or other online systems.

The training of staff who work remotely from the institution's headquarters or campus may be provided via online and telephone support services.

Guideline 16   Educational aspects   (Kear et al., 2016)

The provision of support for staff in the educational aspects of eLearning is essential if e-learning is to be implemented as an integral component of institutional activity. Many academic staff will not have experienced e-learning during their own education and may not have received training in the educational possibilities of e-learning.

The development of early generations of e-learning programmes was driven by enthusiasts, but future institutional development should be based on involvement by the majority of academic staff. Institutions must foster an environment that encourages and supports the development of teaching skills and expertise amongst its staff. Recognition of these in its structures of reward and esteem is an important factor.

An institution may choose to implement a formal, mandatory programme of training, to equip staff with a basic introduction to e-learning techniques before they assume significant responsibilities for e-learning. However, in a higher education environment a more collegial approach is likely to be adopted, particularly with respect to academic staff.

Lighter touch approaches might involve a rolling programme of seminars, websites providing examples of pedagogic techniques, developmental workshops for course development teams etc.

Guideline 16.1   Educational support

Staff need to be supported in the development of the teaching skills and methods that are necessary for e-learning.

Enthusiasts and professionals may have key expertise but be dispersed across an institution. This can be focused by the formation of a real or virtual department within the institution charged with the responsibility for e-learning development. Members of this department can make their expertise available to others involved in e-learning delivery via, for example:

internal consultancy; secondment to course development teams; training courses; seminars (real and virtual); and good practice guides.

Guideline 16.2   Educational innovation

Educational innovation and development should be seen as a key activity for academic and student support staff within the institution. The efforts of staff in this area should be respected, acknowledged and rewarded.

Workload planning processes should acknowledge the time required to develop and practice new teaching skills.

Guideline 17   Resources   (Kear et al., 2016)

Those involved in the development and delivery of e-learning courses and programmes should have access to the resources to enable them to undertake their activities effectively. The aspects identified in this section include information resources, administration and support in their career development.

Guideline 17.1   Information and media support

Staff should have support in the acquisition of information and media materials necessary for them to fulfil their role in the development and delivery of e-learning programmes. This should include information needed to understand and track intellectual property rights, particularly when use is made of OER.

Information on the performance of current and previous eLearning programmes is an important aspect of achieving improvement in programme design and delivery; hence staff should have access to institutional data and other information relevant to their sphere of activity.

Data on student activity and performance may be captured and stored to allow the analysis of individual e-learning activities. This is an aspect of learning analytics that focuses on the improvement of the learning experience rather than the individual learner.

The indexing and archiving of e-learning materials is essential to institutional learning, in order to avoid reinvention of materials, teaching activities or software tools. The indexing and archiving of e-learning materials demands different approaches to those required for traditional materials, and institutions risk losing hard won experience if they are unable to easily identify and access exemplars of materials or software components. Library staff can provide this expertise.

The semantic web may be one way to increase the reusability of learning resources. This envisages web material marked-up in a way that is machine-understandable. Semantic web technologies could help learners to find learning resources, courses, or complete learning paths that best suit their needs.

Guideline 17.2   Administrative support

Effective administrative support should be provided to all staff involved in the development and delivery of e-learning courses and programmes.

Institutions are increasingly providing online interfaces for administrative services which can be used efficiently by students and staff. There is a parallel requirement that interactions requiring staff input are processed with the speed and efficiency appropriate to a customer service organisation operating primarily via online interaction, e.g. full student information is available to all staff handling phone or postal enquiries.

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The introduction of e-learning may create new administrative tasks or shift the burden to different staff compared to previous modes of delivery (e.g. the administration and management of teaching activities devolved to tutors/mentors). The impact on staff should be assessed and appropriate arrangements made for additional staff to be employed or for adjustment of workloads.

The institution may operate a network of study centres; if so, these should provide tutors and teachers with support for effective teaching (e.g. supply electronic teaching facilities independently of the central office). This includes administrative support, both at the study centre as well as (online) via the central office.

Guideline 18   Career development, incentives and recognition   (Kear et al., 2016)

Staff motivation is important to the effective development of eLearning programmes. The institutional leadership should provide motivation for staff to engage with e-learning by emphasising eLearning as a high-status activity and providing reward by financial incentive or peer esteem. Institutional initiatives to change teaching methods will not be well supported if the staff are not appropriately rewarded for adopting new practices.

The involvement of staff in e-learning should therefore be properly recognised and rewarded by the institution. This recognition and reward needs to be integrated into mechanisms for promotion and career development.

The introduction of e-learning may require different working patterns, and produce different outputs, to those that have been used as markers for existing career progression patterns. The institutions should therefore pay considerable attention to the impact of new teaching methods on career review and progression procedures.

Guideline 19   Survey response level

Ensure that the number of respondents is as high enough to be representative of the staff population, so that findings from surveys can be enacted with confidence.

4.5   Guidelines for criterion 4: quality of research into online teaching and learning

The CODUR indicators for the quality of research into online teaching and learning criterion are as follows (Pozzi et al., 2018, p. 22).

- Internal budget devoted to research on online learning and teaching per Full Time Equivalent (FTE) academic staff (data provided by the institution)
- Percentage of Full Time Equivalent (FTE) staff involved in research on online learning and teaching (data provided by the institution)
- Yearly average n. of publications on online teaching & learning per Full Time Equivalent (FTE) academic staff (WoS or Scopus publications) (data provided by the institution or review by external panel)
- Yearly average number of publications with authors from other countries per Full Time Equivalent (FTE) academic staff (WoS or Scopus publications) (data provided by the institution or review by external panel)
- Internal budget devoted to disciplinary research per Full Time Equivalent (FTE) academic staff
- External research income concerning disciplinary projects per Full Time Equivalent (FTE) academic staff

- Yearly average n. of publications per Full Time Equivalent (FTE) academic staff (WoS or Scopus publications) (data provided by the institution or review by external panel)

Guideline 27 "Research, scholarship and innovation in e-learning   (Kear et al., 2016) (Kear et al., 2016) in section 4.7 "Guidelines for criterion 6: sustainability of the institution" contains guidance for the management and integration of research into online teaching and learning into an institutions practices. This includes processes for evaluating and (if appropriate) adopting research findings.

Guideline 20   Targeted research

Research into online teaching and learning may cover many types of education (e.g. informal, formal, school, higher education etc.). Findings from research in some types may be more difficult to translate into enhancements in a university setting, so institutions should take when investing in, or pursuing, research opportunities.

4.6   Guidelines for criterion 5: quality of organisation of the institution

The CODUR indicators for the quality of organisation of the institution criterion are as follows (Pozzi et al., 2018, p. 23).

- Percentage of student complaints or appeals solved/closed (data provided by the institution)
- Number of full-time equivalents (FTEs) employed for non-instructional, non-technical support services (providing assistance for admission, financial issues, registration, enrolment, etc.) weighted by student satisfaction for the service (data provided by the institution + student survey)
- Student satisfaction for room, laboratory and library facilities (through student survey)
- Student satisfaction for organization (through student survey)

Other sections provide guidelines that will contribute to the overall quality of organisation of an institution. In particular section 4.3 "Guidelines for criterion 2: quality of student support" and section 4.2 "Guidelines for criterion 1: quality of teaching & learning" provide guidelines that will affect the number of student complaints and appeals. Section 4.3 "Guidelines for criterion 2: quality of student support" provides guidance about how non-instructional, non-technical support services can be deployed effectively, in addition to guidance about online room, laboratory and library facilities. Section 4.8 "Guidelines for criterion 7: quality of the technological Infrastructure" provide guidelines that should also be considered with respect to the technological infrastructure that supports an institutions online educational services.

Guideline 21   Survey response level

Ensure that the number of respondents is as high enough to be representative of the student body so that findings from surveys can be enacted with confidence.

4.7   Guidelines for criterion 6: sustainability of the institution

The CODUR indicators for the quality of sustainability of the institution criterion are as follows (Pozzi et al., 2018, p. 23).

- Availability of an Institutional Strategic Plan for Online Learning (online vision statement, online mission statement, online learning goals and action steps, ...) (data provided by the institution)
- Percentage of curriculum changes resulting from an assessment of student learning (either formal or informal) within a fiscal year [a measure on increased flexibility

within the curriculum development process to better respond to a rapidly changing world] (data provided by the institution)

- Percentage of total institutional expenditure dedicated to online programmes (data provided by the institution).

Kear et al. (2016) provide a useful overview that contextualises guidelines that concern support for sustainability of institutions, in terms of strategic management. Following this overview, there are a number of more specific guidelines from EADTU and the CODUR project.

"The majority of institutions evolved when the prevalent mode of study was face-to-face and campus-based. New modes of study offered through ICT should prompt institutions to review their strategies to take into account increased use of ICT, both in institutional and public online spaces.

The institution should have defined policies and management processes that are used to establish strategic institutional objectives, including those for the development of e-learning. In a mature institution, strategic management will operate over several time horizons.

The institutional strategic plan should identify the roles that eLearning will play in the overall development of the institution and set the context for production of the plans of academic departments, administrative and operational divisions.

The institutional plan should outline options for the use of eLearning in teaching that may define a spectrum of blends of eLearning and more established teaching mechanisms. Institutional plans should also consider issues of resourcing, information systems, staff development, innovation and collaboration with partners.

Faculty and departmental plans should aim to best match the student requirements of their particular market sector (national/international focus) in presenting e-learning/blended learning options.

The institutional strategic plan should ensure that plans of academic departments are consistent with each other. Student mobility between departments should not be restricted by major differences in policy or implementation with respect to e-learning " (Kear et al., 2016).

Guideline 22   Policies and plans   (Kear et al., 2016)

The institution should have defined policies and management processes that are used to establish strategic institutional objectives, including those for the development of e-learning. An institutional strategic plan will be the uppermost tier in a planning hierarchy and will shape the plans of academic, administrative and operational units of the institution. The strategic plan will be regularly monitored, evaluated and revised in line with experience and developing requirements. In revising strategy, account should be taken of recent developments in the field of e-learning (for instance learning analytics and MOOCs) and the external environment (for instance the increasing use of tablets).

The strategic plan should encompass a vision for the use and development of e-learning within the institution and provide a timescale for the achievement of strategic goals. The strategic plan should address the provision of the human, technical and financial resources necessary for implementation. Due account should be taken of key strategic issues such as relationships with other institutions, funding and regulatory bodies.

Institutional policies must pay due regard to ethical and legal considerations. Of particular relevance to e-learning is national legislation covering: accessibility to those with particular

needs, copyright and other intellectual property rights, data protection, privacy and freedom of information. The institution should have a strategy for communicating the responsibilities that emerge from these policies to staff and students.

Guideline 23   The role of e-learning in academic strategy   (Kear et al., 2016)

The institutional strategic plan should identify the roles that eLearning will play in the overall development of the institution and set the context for production of the plans of academic departments, administrative and operational divisions.

The institutional plan should outline options for the use of eLearning in teaching that may define a spectrum of blends of eLearning and more established teaching and learning mechanisms. The institution should have a policy on the use of external environments and resources such as public social media and open educational resources.

Faculty and departmental plans should aim to best match the student requirements of their particular market sector (national/international focus) in presenting e-learning/blended learning options.

The institutional strategic plan should ensure that plans of academic departments are compatible with each other. Student mobility between departments should not be restricted by major differences in policy or implementation with respect to e-learning.

Guideline 24   Policy on resources   (Kear et al., 2016)

Institutions developing and delivering e-learning programmes should have a comprehensive set of policies that relate to the effective provision for delivery of teaching materials and student support services, whether through its own or through public infrastructure. The policies should address issues of:

- financial, physical and technical resources;
- staffing and staff development;
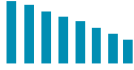- management, responsibility and accountability.

Implementation of e-learning may require an institution to review and revise its policies on the deployment of resources to ensure that it has in place an adequate managerial, technical and physical infrastructure.

The administrative aspects of e-learning programmes may require significant changes in administrative systems to enable students to access information regarding their status, progress, etc. online. Equally the system must have the capability to distribute appropriate teaching resources to students. To meet these needs the institution must ensure that its management information system is capable of operation to appropriate standards of reliability, security and effectiveness.

Italian context: In Italy, sustainability evaluation mainly considers economic resources (see DM 987/2016), while other resources are considered for the evaluation of other criteria (e.g., the ratio between full-time teachers and students is considered an indicator of quality of teaching and learning). A more complete evaluation of resources available and allocated could paint a clearer picture of an institution's sustainability on the short and long term.

Guideline 25   Policy on virtual mobility   (Kear et al., 2016)

The capability of ICT systems to enable routine communication and sharing of information between dispersed individuals and communities is changing the nature of personal and professional networks. Major business concerns operate on a global basis with projects shared between teams in multiple locations. These technologies enable study to be conducted beyond the confines of the traditional campus.

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E-learning provides opportunities for presenting programmes that offer considerable flexibility in terms of place and time of study and equally provides opportunities for students and staff to participate in virtual communities.

Programmes encouraging the physical mobility of students are commonplace and receive considerable support from agencies such as the EU. The development of policies that encourage and facilitate virtual mobility is desirable for all institutions and is of particular relevance to those operating e-learning programmes.

Policies for virtual mobility should be designed to provide students with opportunities to study programmes from institutions geographically remote from the student's home base and across national boundaries.

Institutions participating in virtual mobility programmes should develop policies that embrace academic, professional and social aspects of student and staff mobility.

Institutions participating in virtual mobility programmes should ensure that assessment of student outcomes is consistent, well documented and interchangeable between institutions. Wherever possible, student performance on a virtual mobility programme should be recognised for the purposes of an award of the home institution in the same way as for other programmes.

Italian context: For Italian institutions, internationalization is partly evaluated by measuring the percentage of graduated students who acquired a portion of their university credits abroad. This system ensures that mobility is encouraged and that a credit transfer system is operative and functional.

Guideline 26   Ventures beyond the institutional boundary   (Kear et al., 2016)

The infrastructure and developmental costs of e-learning can be significant and skills may be required that are not available within the institution. This may be mitigated by collaboration with other institutions or by using external services and resources to develop and/or deliver e-learning. For example, institutions have used external platforms for providing Massive Open Online Courses (MOOCs).

Contractual arrangements between the collaborating partners should define the scope of the collaboration, the responsibilities of partners, financial arrangements and the relationships with third parties, particularly students and teachers. All collaborative ventures should be subject to risk analysis, and contingency planning should be in place in the event of the collaboration breaking down to ensure that student study experience is not jeopardised.

Institutions have produced MOOCs as a way of developing expertise in e-learning away from their core offering. An institution should have a policy that covers engagement with MOOCs, setting out the benefits, costs and risks. MOOCs allow an institution to offer e-learning without full conformance to an external accreditation / quality process since MOOCs are typically not credit bearing. However, since there is a reputational risk attached to poor quality, the institution should have a clear policy on an appropriate level of internal oversight.

Another, less formal, collaborative approach is the use and/or development of Open Educational Resources (OER). Sharing and reuse of e-learning material in OER repositories can mitigate the cost of development. They also provide a low risk entry route into online resource-based teaching for individual academics.

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At the lowest level of engagement, the institution needs to understand the management of digital rights in this context; the Creative Commons licences are a widely understood rights framework for both provision and use of material.

Higher levels of institutional engagement may include an institution publishing and maintaining an institutionally branded repository of OER or institutional involvement in an OER consortium. In such cases, the strategic rationale for involvement should be evident to staff. In particular, academic staff should understand whether publication of their teaching materials as OER is allowed, recommended or obligatory.

Institutions can also use public social media, such as blogs, wikis and social media, to support learning and build community. If this approach is adopted, issues which need to be considered include accessibility, privacy and the boundary between academic and social life.

Guideline 27   Research, scholarship and innovation in e-learning   (Kear et al., 2016)

Policies on research, scholarship and innovation in e-learning need to cover both technical and educational aspects.

While not all institutions with e-learning programmes will be in a position to conduct fundamental research into these areas, institutional management needs to ensure that there is a clear policy framework through which new research findings, developments and emerging techniques may be identified, evaluated, disseminated and (where appropriate) adopted. This may involve frameworks to support, resource and evaluate innovative practice by departments, programmes and individual teachers. While such technology tracking activities may be determined by the needs of the institution's own e-learning programmes, the results will usually be of relevance to e-learning programmes at other institutions and the results may represent new scholarship in the field and be published accordingly.

Guideline 28   Learning analytics   (Kear et al., 2016)

An e-learning environment can collect extensive data on student activity and performance, for example by tracking the activity of an individual across the pages of a VLE. The systematic measurement, collection, analysis and reporting of such data is known as learning analytics. The learning analytics approach has the overall aim of improving the learning of students and has potential as a tool for quality enhancement.

Learning analytics relies on a 'big data' approach that gathers large volumes of varied data and uses statistical analyses to make predictions. Typical data collected would include number of visits and time spent on VLE pages (including downloads, videos, and forum posts) to reveal whether a student has engaged with particular resources and what routes they took through material. In blended delivery, this might be combined with data on campus attendance, visits to the library and so on. The student's assessment record on their current and previous courses may also be used, together with prior educational achievement and other demographic and socioeconomic data from the student's personal records.

Learning analytics can be used for a variety of purposes, focusing on the individual learner, the course experience, or the whole institution. Some examples are below.

- An institution can evaluate courses and curricula to understand which courses perform well as measured by retention, pass rates, or satisfaction. The big data approach offers more sophisticated analysis than simple summary statistics, for example identifying a course that has a better pass rate than expected given the previous educational achievements of the students it attracts.

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- Comparative analyses can highlight features of course design that lead to successful learning, and so make it possible to design more successful courses in future.
- A course designer / presenter can monitor a course in presentation to spot pinch points, for example a place in a course where student engagement drops sharply. Action taken might be to provide additional teaching or to rewrite of material for the next cohort.
- A tutor can monitor a group of students to target those for whom timely and appropriate intervention may increase their chance of passing the course.
- A student can monitor their own performance or learning behaviour, relative to themselves over time or to others in a cohort, and take action as a self-regulated learner.
- An automated system could suggest alternative resources or behaviours to students who show patterns of activity associated with poor results.

A learning analytics system should report results to users in a way that is clear and understandable and leads to appropriate action.

Reporting is typically through dashboard systems that are tailored to the intended class of user: tutor, student or support staff.

Learning analytics relies on the collection of data on individual behaviour and therefore raises ethical and legal issues: these include privacy, data protection and informed consent. The institution should have a code of practice on learning analytics that is consistent with the institution's ethics policies and guidelines. Policies should be in place to ensure that collected data is accurate and held securely. It is important to develop an understanding of the purposes and scope of learning analytics that is widely shared among students, teachers and the institution's management. This is particularly the case because, in practice, students may not be in a position to withhold consent since the institution collects data (for example assessment scores) for its normal operations and for regulatory purposes. The inclusion of demographic and socioeconomic data about individuals is a particular issue: it might improve the accuracy of a statistical model that predicts student success, but may lead to prejudicial judgements about individuals.

4.8 Guidelines for criterion 7: quality of the technological Infrastructure

The CODUR indicators for the quality of sustainability of the institution criterion are as follows (Pozzi et al., 2018, p. 23).

- Student satisfaction with the overall learning platform (through student survey)
- Measure of compliance with the accessibility guidelines WCAG 2.0 (through technical institutional survey)
- Measure of interoperability (Interoperability with external open sites (e.g., social media, DropBox, Google Drive), interoperability between LMSs (Learning Management Systems), information and teaching/learning materials exchange (LTI, SCORM, ...), Single sign-on (SSO) access control, etc. (data provided by the institution)

EADTU (2016) provide a useful overview that contextualises guidelines that concern support for course delivery, in terms of various technologies that may be used by staff and students. Following this overview, there are a number of more specific guidelines from EADTU and the CODUR project.

"Course delivery encompasses the Virtual Learning Environment, personal learning environments and/or other channels, such as social media, through which students receive their course materials or communicate with fellow learners and staff. These systems represent a very significant investment of financial and human resource in their acquisition and on-going support.

The selection of a particular system, which may influence teaching developments for many years, should be driven by both educational and technical requirements. Educational requirements   include delivery of learning resources, facilities for online communication and tools for assessment. Technical requirements include reliability and security standards. The delivery system should be reviewed and monitored to ensure it continues to meet these requirements.

Effective course delivery requires collaboration between academic and   operational divisions of the institution. Technical infrastructure should serve the educational requirements of the academic community, both students and staff.

The system through which the e-learning student interacts with the University may have several components: a system through which the student accesses learning materials and teaching services, an administrative system that handles registration, etc. These components may be commercially acquired or developed by the institution itself. We are using the term VLE as a coverall term to describe this system. In a well-developed system a student should be able to access all services via a single log-on." (Kear et al., 2016)

Guideline 29   Technical infrastructure   (Kear et al., 2016)

Effective delivery of e-learning courses requires the institution to acquire, operate and maintain a computer-based system capable of: registering students to courses and programmes; distributing e-learning materials to students; maintaining and updating records of student performance; conducting aspects of e-business with respect to student fees etc.; and facilitating communication between the institution, its students, staff and affiliate staff (if any).

The system must be capable of operation to standards commonly encountered in the commercial world in terms of availability and capacity to cope with anticipated business flows. This section does not purport to offer detailed definitions of the services or the technical specifications required.

The technical infrastructure for e-learning, together with its management and development, should be guided by a strategic plan at institutional level.

Guideline 29.1   System design and architecture

The design and architecture of the institution's technical infrastructure is a key factor in successful delivery of e-learning programmes. This may demand significantly greater capacity and capability than is required to support campus based students or research programmes.

Institutional systems are one aspect of the delivery system, the other major factor being the facilities owned or accessed by its target student audience. Increasingly students can be expected to own their own devices (laptops, tablets or smartphones). Institutional decisions should therefore be influenced by information about the equipment and online services used by students. Hence socio-technical foresight activities play a role in informing institutional decision making. The institution should adopt a strategy that allows for increases in demand and the emergence of new technologies and patterns of use. For example, there has been a shift from personal computers to tablets and smartphones; this

creates a pressure for platform-neutral delivery to which content and web applications delivered through a browser offer one solution. But perhaps paradoxically, the rise of tablets and phones has also created a demand for apps which are high platform-specific.

The institution may choose to work in consortium arrangements with other institutions or to outsource provision of its technical infrastructure. In either case it should ensure that the arrangements will provide effective service for students and staff.

Guideline 29.2   Technical infrastructure management

The technical infrastructure should be professionally designed, managed and maintained to ensure that it meets capacity and availability targets.

Services and standards of performance should be equivalent to those encountered in customer service organisations such as banks and other companies that offer their customers online services. Staff responsible for these functions should have performance targets and reward systems equivalent to those encountered in the service sector.

Guideline 30   Virtual Learning Environment   (Kear et al., 2016)

The term Virtual Learning Environment (VLE) is used to describe the collection of software systems that provide materials and facilities for online learning. These systems allow for management of all processes from course authoring to delivery of the course materials to students and recording their performance. (The term Learning Management System (LMS) is often used synonymously with VLE but may indicate a greater focus on administration than on course authoring and production.)

The system requires integration with many pre-existing systems within an institution e.g. its student registration system. Some institutions may choose to implement a VLE by an internal systems integration project. Increasingly institutions are purchasing commercial systems, or using open source systems that may be modified to suit institutional requirements.

This section describes aspects of the functions carried out by the VLE. It is not a checklist for VLE functionality.

Guideline 30.1   Learning platforms and management systems

The core of the Virtual Learning Environment is the system for delivery of e-learning materials to students. This component of a VLE may also be known as a learning platform. Its facilities influence the nature of teaching and student interactions that can be offered and affect the work of course designers and students.

Previously many institutions operated home-grown learning platforms, often with their origins in a single department. For most institutions the operation of such systems is no longer a feasible option. Instead, institutions may choose to:

- buy a system from a commercial provider and manage it in-house;

- buy a managed service from a commercial provider;

- operate and manage an open source system (and contribute to the development community);

- join a consortium that has itself selected one of the above options.

The advent of cloud computing may result in institutions and their students using services that are hosted in the cloud rather than on servers controlled by the institution's staff. Cloud computing is 'software as a service': the cloud provides the infrastructure and platforms on

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which the applications run and end-users access cloud-based applications through a web browser or a light-weight desktop or mobile app.

Students are accustomed to using public services for social media (e.g. Facebook) and storage and sharing of media (e.g. Flickr). The issues facing institutional use of these services include how to integrate them with a VLE and defining the boundary between institutional and personal space.

Whatever the service model chosen, the institution retains the responsibility for ensuring it fulfils institutional objectives.

Learning analytics approaches to improving student learning depend on accurate tracking of an individual student's activity in the VLE. To support this the VLE should capture appropriate data and provide reporting tools that can be tailored to the intended user (student, tutor or support staff).

A further aspect provided by a VLE is a learning management system that focuses on administrative aspects such as the allocation of students and staff to courses, the submission of assessment, etc. Many institutions have existing administrative systems and the VLE should be integrated effectively with these.

Guideline 30.2   E-learning material provision

E-learning resources should be developed or selected to meet the requirements of target users (learners and teachers). The eLearning system should address the needs of users for easy access and high quality interaction with the learning materials. The eLearning system should enable students to interact with all features of the learning materials as intended by the course developers without any reduction in intended functionality or interactivity.

In circumstances where students do not have routine access to good connectivity, the institution may use hybrid systems to deliver materials. For example, materials that have large amounts of dynamic graphics or video content may be distributed via DVD rather than online.

Course materials and delivery technologies should be evaluated under realistic conditions of anticipated use that replicate both the equipment and connectivity used by students and the traffic volumes anticipated at central portals and course servers.

Copyrights and licence arrangements should be protected and managed effectively and any limitations on the use of third party materials effectively implemented.

The organisation's approach and policy on interoperability of resources and adherence to technical standards should contribute to the effectiveness of the system.

Guideline 30.3   Information requirements

There should be clear information available to students and other interested parties on the main aspects of each course: its size and level, subject content, relationship with other courses, mechanisms for dissemination of course materials, and types of assessment.

Information may be extracted to suit the needs of differing audiences and modes of presentation, for example prospective students, enrolled students, system managers and student support agents.

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Guideline 30.4   *Monitoring and updating the e-learning system*

The e-learning provision should be monitored and managed on a continuous basis to ensure its effectiveness. It should be evaluated and updated on a planned and appropriate basis. Monitoring should cover both the detailed operational aspects of the system (performance, availability, capacity utilisation, user error reports etc.) and also the performance of the human support systems.

Routine student surveys administered online should be augmented by consultation with the student body regarding the effectiveness of the system. This information should be used to inform future development.

Guideline 30.5   *Online assessment*

Online assessment is an important function of a Virtual Learning Environment, and may be formative or summative. Online systems are capable of delivering assessments in a range of styles and providing remedial teaching in response to student error. The system should be designed to do this effectively and provide feedback speedily, linking with other support mechanisms wherever possible.

For assessments that are essentially conventional in format, e.g. essays, but are submitted online, security in transit between student and marker, quality of the marking tools and detection of plagiarism are technical aspects that should be implemented and monitored.

Students should have access to their up-to-date assessment record at all times.

Guideline 30.6   *Alternative formats*

Though it is envisaged that the majority of learning needs will be met by online materials, a course may be designed to include physical materials (e.g. printed books or CDs/DVDs). Additionally, online material may need to be provided in multiple formats to meet the accessibility needs of individual students. The learning system should make it clear to students which materials are delivered online and which in a physical format.

4.9 Usage

The CODUR guidelines, like the E-xcellence resources upon which they draw, provide guidance on all of the CODUR criteria of interest. They can be used to focus discussion during self-evaluation and review, and to act as an introduction to the key issues an institution faces when introducing e-learning, and thus are applicable to institutions at a range of stages of adoption of e-learning. Lastly, the guidelines are mostly phrased in high-level terms, which should mean that they remain valid even as technology and pedagogy evolves.

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5 A3.2.   Scenario development for types of institutions and success factors

In Table 1 we describe scenarios illustrating how different types of institutions could utilise the guidelines described in section 4, and put forward some criteria for success. We consider three broad classes of institution.

(i) Degree-awarding institutions for which the main mechanism for teaching and learning is online i.e. students can carry out all the required learning without face-to-face interaction with teachers.

(ii) Degree-awarding institutions for which some teaching and learning opportunities are provided online, but students can learn what they need to without availing themselves of the online opportunities (this class is named 'conventional universities')

(iii) MOOC platform providers, organisations that provide an eLearning platform but do not award degrees themselves.

Scrutiny of the table shows similarities and differences between the three classes of institution with respect to how the guidelines related to different criteria could be applied.

- For Criterion 1 quality of teaching & learning; 3 quality of teacher support; 5 quality of organisation of the institution; and 7 quality of the technological Infrastructure; the approaches recommended for online universities and MOOC providers show similarities, however those for conventional universities differ.
- For criterion 4 quality of research into online teaching and learning; and 6 sustainability of the institution; the approaches recommended for conventional universities and MOOC providers show similarities, however those for online universities differ.
- For criterion 2 quality of student support; the approach taken by the three types of institution should be different for each class of institution.

It is clear that the three classes of institution proposed are stereotypical, and that there will be big variations between institutions belonging to any one of these classes, and also institutions that do not fit cleanly into one particular class. However, Table 1 shows the kinds of differences that may occur in the way that different types of institutions will be able to make use of the guidelines.

Table 1   Table showing scenarios illustrating how different types of institution could utilise the CODUR guidelines

Criteria	Online universities	Conventional universities	MOOC providers
criterion 1: quality of teaching & learning	**Utilise the guidelines:** to effect operational, quantitative or qualitative enhancements to quality of teaching and learning. **Success criteria**: scores on teaching	**Utilise the guidelines:** to effectively introduce online teaching and learning in appropriate areas of the curriculum. **Success criteria**: scores on relevant indicators meet targets.	**Utilise the guidelines:** to effect operational, quantitative or qualitative enhancements to quality of teaching and learning. **Success criteria**: scores on teaching

	and learning indicators increase.		and learning indicators increase.
criterion 2: quality of student support	**Utilise the guidelines:** to effect operational, quantitative or qualitative enhancements to quality of support provided to students. **Success criteria**: scores on student support indicators increase.	**Utilise the guidelines:** to effectively introduce support for students studying online. **Success criteria**: scores on relevant indicators meet targets.	**Utilise the guidelines:** to identify ways in which quality of support provided to students could be improved, and proceed to effect these improvements. **Success criteria**: scores on student support indicators increase.
criterion 3: quality of teacher support	**Utilise the guidelines:** to effect operational, quantitative or qualitative enhancements to quality of support provided to teachers. **Success criteria**: scores on teacher support indicators increase.	**Utilise the guidelines:** to effectively introduce support for academics teaching online. **Success criteria**: scores on relevant indicators meet targets.	**Utilise the guidelines:** to effect operational, quantitative or qualitative enhancements to quality of support provided to teachers. **Success criteria**: scores on teacher support indicators increase.
criterion 4: quality of research into online teaching and learning	**Utilise the guidelines:** to effect operational, quantitative or qualitative enhancements to quality of research into online teaching and learning. **Success criteria**: scores on research into online teaching and learning indicators increase.	**Utilise the guidelines:** to introduce or develop research into online teaching and learning. **Success criteria**: scores on research into online teaching and learning indicators increase or meet targets.	**Utilise the guidelines:** to introduce or develop research into online teaching and learning. **Success criteria**: scores on research into online teaching and learning indicators increase or meet targets.
criterion 5: quality of organisation of the institution	**Utilise the guidelines:** to effect operational, quantitative or qualitative	**Utilise the guidelines:** to introduce or develop operational, quantitative or	**Utilise the guidelines:** to effect operational, quantitative or qualitative

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	enhancements to quality of the organisation of the institution. **Success criteria**: scores on quality of the organisation of the institution indicators increase.	qualitative enhancements to quality of the organisation of the institution with respect to its online services for education and related administration. **Success criteria**: scores on quality of the organisation of the institution indicators increase	enhancements to quality of the organisation of the institution. **Success criteria**: scores on quality of the organisation of the institution indicators increase.
criterion 6: sustainability of the institution	**Utilise the guidelines:** to effect operational, quantitative or qualitative enhancements to the sustainability of the institution. **Success criteria**: scores on quality of the sustainability of the institution indicators increase.	**Utilise the guidelines:** to introduce or develop operational, quantitative or qualitative enhancements to the sustainability of the institution. **Success criteria**: scores on relevant indicators meet targets or increase.	**Utilise the guidelines:** to introduce or develop operational, quantitative or qualitative enhancements to the sustainability of the institution. **Success criteria**: scores on relevant indicators meet targets or increase.
criterion 7: quality of the technological Infrastructure	**Utilise the guidelines:** to effect operational, quantitative or qualitative enhancements to the quality of the technological Infrastructure. **Success criteria**: scores on quality of the technological Infrastructure indicators increase.	**Utilise the guidelines:** to introduce or develop operational, quantitative or qualitative enhancements to the quality of the technological Infrastructure. **Success criteria**: scores on quality of the technological Infrastructure indicators meet targets or increase.	**Utilise the guidelines:** to effect operational, quantitative or qualitative enhancements to the quality of the technological Infrastructure. **Success criteria**: scores on quality of the technological Infrastructure indicators increase.

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6 A3.3. Fostering a European Leadership in Online Education Rankings

In this section we conclude by discussing what European leadership in Online Education Rankings could mean for a range of stakeholders.

A European Leadership in Online Education Rankings could be considered as meaning

a) that European organisations are recognised as being leaders in the development and delivery of practices and processes for ranking online education, and

b) that European educational institutions succeed in any online education rankings that they are included in.

However, there are a variety of actors with interest in the ranking of quality of education, e.g.

- Employers

- Media organisations

- Policy makers

- Ranking providers

- University students and prospective students;

- Universities and their staff

(see e.g. Çakır, Acartürk, Alaşehir, & Çilingir, 2015; Sandmaung & Ba Khang, 2013).

The notion of 'success' and 'leadership' in Online Education Rankings will vary from stakeholder to stakeholder. Goglio (2016) suggests the use of an Ethical Matrix approach to study the implications of rankings for a variety of stakeholders. The Ethical Matrix approach was originally developed by Mepham, Kaiser, Thorstensen, Tomkins, and Millar (2006) to help decision-makers in the food and agriculture sector reach shared agreements about ethically sensitive issues. The form can be adapted to meet a particular project's aims, but typically an Ethical Matrix is composed of three cells per stakeholder: Benefit, Autonomy, Fairness. The contents of each cell specifies the main criteria that would need to be met if a particular principle, e.g. fairness, were respected for a particular stakeholder group, e.g. students, in reference to the use or production of Online Education Rankings (Goglio, 2016; Mepham et al., 2006). Some stakeholders mainly have an interest in using Online Education Rankings (e.g. students, employers), some in generating rankings (e.g. Ranking providers) and some in both generating and using rankings (e.g. Universities and Policy Makers). An Ethical Matrix adapted to show how the quality of online education expressed through Online Education Rankings may impact on a variety of stakeholders is shown in Table 2. This table shows how a variety of interpretations of 'leadership' (.e. 'Benefit, Autonomy' and 'Fairness') could affect each stakeholder group.

The matrix presented in Table 1Table 2 illustrates that there are many criteria for success that are common amongst the various stakeholders. However, there are also several key differences that will have to be negotiated. For example "Systematic availability of reliable and transparent data" can be seen as key to enabling fair opportunities for use of information obtained from Online Education Rankings for employers and media organisations. However, for Ranking Providers, "Transparency of operation" can be envisioned as key to enabling fair competition between Ranking Providers (i.e. Ranking Providers may not favour disclosing the underlying data itself, but may happily describe

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their processes for collecting, analysing and presenting the data).   There will need to be negotiated agreements amongst different stakeholders to ensure leadership and success for all parties. However, for particular stakeholder groups, there are obvious routes to improvement and ultimately leadership. For example, universities wishing to improve their standing with respect to provision of online education should adopt and follow the advice and guidance provided by appropriate bodies. In the case of European Institutions, Kear et al's "Quality Assessment for E-learning: a Benchmarking Approach" provides valuable guidance (Kear et al., 2016) as we have indicated in our guidelines presented in section 4. Alternatives are available for other educational contexts, e.g. in the U.S. context the OLC 's criteria for excellence in administration of online programs (Shelton, Saltsman, Holstrom, & Pedersen, 2014) is an appropriate choice.

Table 2 Ethical matrix for quality of online education expressed through Online Education Rankings (Author adaptation from Goglio (2016)).

	Benefit	Autonomy	Fairness
Employers	Informed recruitment decisions; Informed decisions about partnerships with universities	Choice of sources of information	Systematic availability of reliable and transparent data
Media organisations	Ability to report on ranking of a range of institutions (not just conventional universities)	Choice of sources of information	Systematic availability of reliable and transparent data
Policy makers	Informed decision-making; cross-national benchmarking	Freedom in policy design	Systematic availability of reliable and transparent data
Ranking providers	Growing business, market success	Independence	Transparency of operation
Students and prospective students	Accurate, reliable, plural and multi-dimensional information about online education	Choice -of sources of information; -of type of institution	Equality of opportunities to access higher education
Universities	Evidence of reputation for providing good education; attract and retain students; attract funding; gain information enabling improvements to	Institutional autonomy of organising teaching, research and institutional governance will be preserved	Accurate representation of institution's quality of online education; Affordable procedures for data gathering and measurement.

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	provision of education		

6.1 Concluding remarks

The CODUR guidelines provide guidance on all of the CODUR criteria of interest, in common with the E-xcellence resources upon which they draw. They can be used to focus discussion during self-evaluation and review, and to act as an introduction to the key issues an institution faces when introducing e-learning, and thus are applicable to institutions at a range of stages of adoption of e-learning.

Rosewell et al. (2017) reported on the experience of institutions who have used the E-xcellence approach. Their findings indicate that universities introducing e-learning regard strategy, curriculum design and staff support as the greatest challenges. Particular issues identified include staff workload and developing an online academic community for students, whereas the provision of reliable IT systems and hardware is seen as unproblematic. Aspects of student support (course information, student guidelines, and administrative support) and course design (interactivity) were interpreted as being areas needing development, although neither student support or course design were seen as problematic. However, Paniagua and Simpson (2018) have identified student support as a key factor to prevent students dropping out of online courses, and note that retention rates are significantly lower for online universities when compared to institutions using face-to-face methods.

All the criteria covered by the CODUR guidelines are important as far as delivery and maintenance of quality in online education is concerned. However, as evidence points to challenges in the particular areas mentioned in the preceding paragraph, institutions may want to examine their provision with respect to the guidelines in the following areas in particular detail: strategy (see sections 4.7 sustainability of the institution, which refers to strategic management), curriculum design (see section 4.2 teaching and learning, which includes curriculum design), staff support (see section 4.4) and student support (see section 4.3).

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