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Quality Assessment for E-learning: a Benchmarking Approach

1st version 2007:

Quality Assessment for E-learning: a Benchmarking Approach

Update 2012:

Quality Assessment for E-learning: a Benchmarking Approach

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Introduction to second edition

The European Association of Distance Teaching Universities (EADTU) is Europe's leading association for Lifelong Open and Flexible (LOF) learning in distance Higher Education (HE) (www.eadtu.nl). As well as e-learning, the model of LOF learning embraces a range of other characteristics such as open learning, distance learning, online learning, open accessibility, multimedia support, virtual mobility, learning communities, and dual mode (earn & learn) approaches.

This manual is the main product of a suite of EU funded projects undertaken under the auspices of EADTU: E-xcellence (2005-2006), E-xcellence plus (2008-2009) and E-xcellence Next (2011-2012). The overall aim of these projects has been to develop a methodology and supporting resources for the quality assurance of e-learning in higher education. The E-xcellence projects involve a core pool of experts from six European Universities with a stake in e-learning developments (see below), and an extended group drawn from a total of 50 institutions during the course of the projects.

The tools produced in the E-xcellence project have been used by institutions involved in the E-xcellence Plus and E-xcellence Next projects, and the outcomes of these exercises shared with respective national Quality Assurance Agencies in discussion events.¹ This edition is based on the manual developed during the initial E-xcellence project but updated to reflect both the experience gained through engagement with institutions and agencies and the extensive changes in e-learning practice in the period since 2005. The most significant developments over this period have been the user friendly suites of communication services packaged and made available in consumer markets as social networking sites, and the growth of the Open Educational Resources (OER) movement in the higher education sector. The E-xcellence Next project has reviewed the impact of these developments and their quality assurance implications. Reports and publications on the process and analyses are available.

In our engagement with institutions, the E-xcellence team have reviewed a broad spectrum of uses of e-learning in institutions operating in both face-to-face and distance teaching modes. We have observed many common challenges in managing the integration of e-learning into pre-existing modes of delivery indicative of a convergence in teaching modes between two formerly distinct sectors.

The launch of the E-xcellence project was broadly coincident with the adoption of the Standards and Guidelines for the Quality Assurance of Higher Education in the European Higher Education Area (EHEA) at the Bologna ministerial meeting in Bergen in 2005. There since has been significant progress in the development of quality assurance systems in higher education led by ENQA (European Association for Quality Assurance in Higher Education). Quality assurance shaped by the European Standards and Guidelines (ESG) has received much attention at the institutional, national and European level through validation centres, universities (and their umbrella organisations), quality agencies, and national ministries of education. These have established systems to cover the full organisational and content-related quality assurance of HE institutions and their programmes. However, few of these systems have so far developed a focus on the parameters of quality assurance relevant to e-learning. This has therefore been the objective of the E-xcellence project. However, despite online learning being identified by ENQA as a priority area, a survey of their members in 2011 indicates that few of their members routinely address e-learning in their activities.²

¹ Reference to location of reports

² Quality Procedures in the EHEA and beyond: Visions for the Future ENQA 2012

It has not been the intention of the project to interfere in any way with existing systems of quality assurance, and this manual is not a comprehensive guide to QA procedures, even in the context of 'pure' e-learning provision. It is assumed that institutions and regulatory bodies will have a defined set of processes which provide for the development, monitoring, evaluation and enhancement of HE provision. This manual offers a supplementary tool which may be used with these QA processes to allow the consideration of e-learning developments as a specific feature. An important aspect of the E-xcellence project is that it offers a European-wide standard, independent of particular institutional or national systems, and with guidance on educational improvement. The E-xcellence Associates scheme has established a community of institutions committed to using the methodology for quality enhancement.

Institutions involved

Core Partners (2005-2012)

- EADTU (The Netherlands)
- Open Universiteit Nederland (The Netherlands)
- Open University (United Kingdom)
- OULU-University (Finland)
- Universidad Nacional de Educación a Distancia (UNED) (Spain)
- PROSE (Belgium)

Partners E-xcellence (2005-2006)

- Centre National d'Enseignement à Distance (CNED)
- Universitat Oberta de Catalunya (UOC)
- Estonian Information Technology Foundation (EITSA)
- National Council for Distance Education (APERTUS)
- Network per l'Universita Ovunque (NETTUNO)
- European University Association (EUA)
- The eLearning Industry Group (eLIG)
- Nederlands-Vlaamse Accreditatie Organisatie (NVAO)

Partners E-xcellence PLUS (2008-2009)

- International Telematic University UNINETTUNO (Italy)
- NVAO (Belgium/The Netherlands)
- Estonian Information Technology Foundation (Estonia)
- Högskoleverket / NSHU (Sweden)
- KU Leuven (Belgium)
- The Czech Association of Distance Learning University (CADUV)
- University of Hradec Králové (Czech Republic)
- Slovak University of Technology in Bratislava (Slovakia)
- Moscow State University for Economics, Statistics and Informatics, MESI (Russia)
- Fernstudien Schweiz (Switzerland)
- Hungarian e-University Network (Hungary)

ESMU: E-learning Benchmarking Exercise in European universities (2009)

Participating universities

Introduction

- University of Southern Denmark
- University of Copenhagen
- Aarhus University
- University of Latvia
- Lund University
- University of Kuopio
- University of Porto
- University of Bologna
- University of Oulu

Partners E-xcellence Next (2011-2012)

- Universidade Aberta (UAb), Portugal
- Open University of Cyprus (OUC), Cyprus
- Riga Technical University (RTU), Latvia
- Akademia Górniczo-Hutnicza (AGH), Poland
- Hellenic Open University (HOU), Greece
- Kaunas University of Technology (KTU), Lithuania
- Moscow State University of Economics, Statistics and Informatics (MESI), Russia
- Accreditation Organisation of the Netherlands and Flanders (NVAO), The Netherlands
- Flemish Interuniversity Council (VLIR), Belgium
- The Flemish Council of University Colleges (VLHORA), Belgium
- African Council for Distance Learning (ACDE), Kenia
- Commonwealth of Learning (COL), Canada
- Latin American and Caribbean Institute for Quality in Distance Higher Education (CALED), Ecuador

Associated partners in Next

- European Centre for Strategic Management of Universities (ESMU), Belgium
- European Association for Quality Assurance in Higher Education (ENQA), Belgium
- United Nations Educational, Scientific and Cultural Organization (UNESCO), France
- EADTU Student Council, The Netherlands

Purpose of the manual

The primary purpose of this manual is to provide a set of benchmarks, quality criteria and notes for guidance against which e-learning programmes and their support systems may be judged. The manual should therefore be seen primarily as a reference tool for the assessment or review of e-learning programmes and the systems which support them.

However, the manual should also prove to be useful to staff in institutions concerned with the design, development, teaching, assessment and support of e-learning programmes. It is hoped that course developers, teachers and other stakeholders will see the manual as a useful development and/or improvement tool for incorporation in their own institutional systems of monitoring, evaluation and enhancement.

A glossary of terms is provided.

Context

Currently there are few institutions that are not exploiting ICT in some way in support of their teaching and learning activity. It is intended that the manual will be relevant to this wide range of e-learning contexts, including the various styles of blended as well as full online provision. Where e-learning is offered alongside other forms of learning as part of an integrated or blended learning programme, it is important that the evaluation of e-learning components takes place alongside those delivered by other means. This allows the relative contributions of different teaching/learning approaches and the role of e-learning in overall provision to be determined. A set of performance indicators, both qualitative and quantitative, chosen to reflect the effectiveness of the programme as a whole, need to be employed.

One of the characteristics of an e-learning environment is the sheer amount of monitoring information which may be made available relative to more traditional methods of learning. Most e-learning platforms provide for an extensive level of monitoring and feedback, and student learning behaviour is usually more easily tracked and recorded in an e-learning context than in a traditional classroom. Also, external reviewers are able to gain access to the full range of course materials and to sample the delivery of the programme directly. This has obvious advantages for evaluation but also certain potential disadvantages associated with the sheer volume of data and opinion available.

The structured environment of the Virtual Learning Environment (VLE) presents one dimension of e-learning but institutions also need to consider the much more unstructured environment provided by the Web. The topic of 'learning analytics' is one of growing interest as academics and others explore how learning takes place within online learning communities and social networks.

It is hoped that by focussing on specific benchmarks and criteria, institutions will be able to develop performance indicators which are fit for purpose in their own context.

Feedback

EADTU is committed to supporting the continuous improvement of e-learning programmes and intends to produce a web-based supplement to the quality manual giving examples of good practice identified by contributing organisations. The resources are published under a Creative Commons licence. Additionally EADTU welcomes feedback from and dialogue with any organisation which may be able to contribute to the dissemination of good practice through the E-xcellence user community.

Organisation

The manual is organised into six sections covering Strategic management, Curriculum design, Course design, Course delivery, Staff support and Student support. Each section follows a similar format setting out i) benchmarks, ii) performance indicators, and iii) guidance notes.

The benchmarks provide a set of general quality statements covering a wide range of contexts in which programme designers and others work. It is intended that the benchmarks will be relevant to virtually all e-learning situations. These benchmarks might usefully form the basis for an institution's quality self-evaluation where the full range of criteria and performance indicators are not judged relevant to the institutional context (e.g. in situations where e-learning developments are confined to a minority of courses or to specialist areas of the institution's work).

The performance indicators which follow then focus on particular topics relevant to the benchmark statements. Not all the performance indicators will be relevant in all situations and several will be seen to cut across more than one benchmark statement. Thus there is not a one-to-one relationship between the benchmarks and the performance indicators since they are pitched at different levels of analysis. Performance indicators have been developed at both general and excellence levels.

The Assessors' notes, provided in a separate document, provide a more detailed account of the issues and the approaches which might be taken to meet requirements in each situation.

Availability

The resources are available online at <http://www.eadtu.nl/e-xcellencelabel/> in the following formats:

- Full text of the Manual in Word and PDF version
- *Quickscan* online questionnaire based formats that enable interactive engagement with the materials.

The website also provides information on the E-xcellence Associates scheme that fosters a user community of institutions with shared interests in the enhancement of quality in their e-learning activities

How to use the Quick Scan

The Quick Scan online questionnaire is intended to give you a first orientation on the strengths of your e-learning performance and the potential for improvement. An initial self-assessment via the Quick Scan can be the basis for a subsequent review using the resources in the manual and assessors' notes.

The Quick Scan should ideally be filled out by a team which includes different stakeholders in your organisation: management, academics, course designers, tutors and students. It is therefore recommended that you build a small team which includes members of the stakeholder groups. The review can be conducted at institution, academic department or module level to suit your own needs. However, if you are operating at department or module level, you should ensure that your team includes those with experience of institutional policy and practice relevant to e-learning.

The team should identify which benchmarks are relevant, and which are less important for your organisation. The team should then collaborate to complete the Quick Scan, including adding comments in the open text areas which are provided.

The result of the Quick Scan exercise should be an agreed self-assessment against the benchmarks that fit your organisation. This will reveal those aspects of e-learning where your organisation is already strong, and those aspects where there are opportunities for improvement.

1 Strategic management

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 e-learning 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 e-learning in teaching that may define a spectrum of "blends" of e-learning and more established teaching mechanisms. Institutional plans should also consider issues of resourcing, information systems, 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.

Benchmarks

- 1 The institution has an e-learning strategy that is widely understood and integrated into the overall strategies for institutional development and quality improvement. E-learning policies conform to legal and ethical frameworks.
- 2 The institution investigates and monitors emergent technologies and educational developments in the field of e-learning and considers their integration in the learning environment. There is an organisational framework through which innovation and development can be fostered.
- 3 The resourcing of developments in e-learning takes into account requirements such as equipment purchase, software implementation, recruitment of staff, training and research needs, staff workload and technology developments.
- 4 Institutional policy ensures that e-learning systems (e.g. an institutional Virtual Learning Environment) are compatible with related management information systems (e.g. a registration or administrative system) and are reliable, secure and effective.
- 5 When e-learning involves activities or resources beyond the institution (for example, virtual mobility of students, institutional partnerships or development of Open Educational Resources), the roles and responsibilities are clearly defined, communicated to those concerned, and controlled by operational agreements where appropriate.

1.1 Policies and plans

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.

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.

Indicators

1 Strategic management

- The institution has an identified group of key staff responsible for formulating, evaluating and developing institutional policies and plans relating to e-learning. These policies and plans are set out clearly for the benefit of all participants and stakeholders.
- The institution has a means for communicating legal and ethical responsibilities to staff and students.

At excellence level:

- There is institution-wide engagement with the development of policies and plans for the achievement and enhancement of e-learning.

1.2 The role of e-learning in academic strategy

The institutional strategic plan should identify the roles that e-learning 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 e-learning in teaching that may define a spectrum of "blends" of e-learning 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.

Indicators

- The e-learning strategy is part of the general educational strategy of the institution and there is compatibility between the approaches to e-learning taken by individual departments and faculties in line with institutional plans.

At excellence level:

- There is a widespread understanding of and engagement with the implementation of e-learning policies across the institution.

1.3 Policy on infrastructure

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.

1 Strategic management

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.

Indicators

- Departmental and faculty plans address issues of resourcing, staffing and staff development for those involved in delivery and support functions.
- Appropriate operating and security standards for all aspects of the provision of online services are defined.

At excellence level:

- Institutional plans make provision for the resources necessary to install and maintain the physical and technical infrastructure needed and allocate responsibility for the delivery of services to specific departments.
- Resourcing plans embrace both initial investment in equipment, software, *etc.* and also set appropriate targets for cycles of updating, renewal and replacement.

1.4 Policy on virtual mobility

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.

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 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.

Indicators

- The institution recognises the benefits of e-learning for virtual mobility, has assessed the problems, and has an explicit policy on virtual mobility.

At excellence level:

- There are exchange agreements with other educational institutions providing e-learning programmes, and inter-operabilities have been agreed and set out with these providers.
- The institution evaluates the virtual mobility policy and its results regularly.

1.5 Ventures beyond the institutional boundary

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.

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.

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.

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 networking sites, 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.

Indicators

- Collaborative ventures are formalised through contractual relationships and service level agreements are in place for these.
- Any use of social media takes account of accessibility and privacy issues.
- Staff are supported in the rights issues associated with use of imported OER and implications of publishing their teaching materials as OER.
- The institution has processes for managing rights in the development and use of OER associated with any institutional managed repository or consortium.

At excellence level:

- A risk analysis is conducted on all initiatives involving third parties and contingency plans to protect student and institutional interests put in place.

1.6 Research, scholarship and innovation in e-learning

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.

Indicators

- There is a policy framework and an agreed set of planned activities directed towards the improvement of e-learning programmes through more effective use of technology, improved teaching and learning approaches, *etc.*
- Activities will be linked with the institution's processes for continuous improvement based on monitoring, feedback and self-evaluation, but will also take account of developments elsewhere, given the rapid pace of progress in e-learning and its applications.

At excellence level

- The institution has a research, scholarship and innovation policy which supports the development and/or evaluation of new technical and educational approaches to e-learning, and a planned programme of activities in support of the policy.
- The results of technology tracking activities are disseminated beyond the institution.

2 Curriculum design

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

The major challenge that institutions face is that of designing curricula that combine the flexibility in 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, and integration of knowledge and skills development.

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.

Benchmarks

- 6 Curricula using e-learning components offer personalisation and a flexible path for the learner, while ensuring the achievement of learning outcomes.
- 7 Learning outcomes are assessed using a balance of formative and summative assessment appropriate to the curriculum design.
- 8 Curricula are designed to include e-learning components that contribute both to the development of subject specific educational outcomes and to the acquisition of more transferable educational skills.
- 9 Curricula are designed to enable participation in academic communities via online social networking tools. These online communities provide opportunities for collaborative learning, contact with external professionals and involvement in research and professional activities.

2.1 Flexibility

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

2 Curriculum design

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

2.1.1 Time and pace

The 24x7 access to computer network systems commonplace in the commercial world is a feature that facilitates flexibility (See 'Student support' section). 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, detailed scheduling may place significant restrictions on the flexibility required by students facing pressures from family or employment obligations.

Indicators

- There is an institutional policy for course scheduling to which curriculum designers adhere.
- Curriculum designers consider the needs of their target audience in their decision making.

At excellence level:

- Institutional policy provides curriculum designers with a range of options for the scheduling of course presentations.
- The selection of scheduling pattern is influenced by market research amongst potential students.
- There is consistency in the scheduling patterns adopted such that student movement across related courses or programmes is facilitated.

2.1.2 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. Increasingly this might include 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

2 Curriculum design

availability, software licensing or specialist video conference services). The requirement for attendance at such centres should be clearly recognised as placing a restriction on student flexibility. Attendance may also be required for assessments where it is important to verify the student's identity. 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.

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.

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 e-learning in territories from which they accept student registrations and to advise students of the status their qualification carries.

Indicators

- Institutional policies provide a consistent approach to defining the circumstances under which students are required to attend a particular location. These will be (i) for instructional reasons or (ii) for reasons associated with identity verification.
- Programme information clearly indicates the pattern of any attendance requirements and the eligibility for study by place of residence.

2.1.3 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, *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.

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

Indicators

- Where blended learning is employed, the curriculum provides an appropriate mixture of online and face-to-face approaches to learning, including assessment.
- Curriculum designers have assigned clear educational functions to the components of the programmes and these match well with the delivery mode envisaged.
- There are opportunities to complete programmes by integrating e-learning and face-to-face courses within a single programme.

At excellence level:

- The institution has a clear strategy for the use of modes of blended learning that is appropriately implemented at departmental level.
- Students are provided with learning experiences that integrate study modes effectively.

2.1.4 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.

Indicators

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- The institution has a clear and consistent policy in respect of modular programme design.
- Statements of module learning outcomes are standardised and widely available.

At excellence level:

- All programmes have a modular structure and courses have credit points that are consistent with national and European norms.

2.1.5 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.

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.

Indicators

- The institution has a credit transfer policy that is widely applied.
- The credit transfer system is aligned with national and European systems of credit transfer and operates bi-directionally.

2.2 Academic community development

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

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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 video-conferencing, 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 a social networking site)
- The ability to collect and share evidence of skills development (e.g. via an e-portfolio)
- Online sharing of resources (e.g. via social networking sites, 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.
- 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 networking sites such as Facebook are used.
- Usability issues in of online environments: students and teachers can experience problems navigating and learning to use the tools offered.

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- 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.

2.2.1 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 e-learning 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 an external social networking site 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

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to all involved in online interactions how the digital record may be used or shared with others.

Indicators

- There are institutional policies relating to the provision of online community spaces for student-student and student-teacher interactions.
- Curriculum designers specify clearly the educational role that student-student interaction plays in their programmes.
- Criteria for the assessment of student online collaboration exist and are applied consistently across programmes and courses.

At excellence level:

- Teaching staff are supported by formal and informal staff development activity in the use of online tools for community building.

2.2.2 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 e-learning 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.

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

Indicators

- The institution offers mechanisms for students to participate in active communities of professional practice where this is an integral part of the programme.

At excellence level:

- The curriculum offers opportunities for (distance) contacts between students and professionals to stimulate and develop a critical attitude.
- The institution works closely with professional bodies in the development of online professional communities.

2.2.3 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

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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 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 e-learning. 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.

Indicators

- The curriculum offers students the opportunity to undertake or be involved in research in order for them to develop appropriate research, critical evaluation and communication skills.
- A progressive development of research skills is an integral component of programme design.

At excellence level:

- The institution has policies regarding the involvement of e-learning students in the activities of campus-based research groups.
- Opportunities are provided for online publication and peer review in a supportive environment

2.3 Knowledge and skills

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.

2.3.1 Transferable skills

The development of a suite of core transferable skills that relate to literacy, numeracy, critical analysis, presentation and communication is an essential aspect of higher education programmes. 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. Increasingly employers also value e-skills: 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 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.

Indicators

- The institution has a clear policy regarding the acquisition and assessment of core transferable skills, including e-skills, which apply to all programmes including those delivered by e-learning.
- The institution has a common framework for the assessment of skills acquisition.

At excellence level:

- The institution actively researches educational techniques for the development of generic skills, including e-skills, and findings are widely disseminated to those involved in curriculum design via publications, workshops *etc.*
- The institution offers an e-portfolio service to assist students in recording evidence of their knowledge and skills development.

2.3.2 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.

Indicators

- Curriculum design enables students to relate course content and skills to identified professional contexts.
- The responsibility for delivery and assessment of outcomes related to professional knowledge and skills is clearly assigned to particular components of the programme.

At excellence level:

- Communications with professional and employer associations regarding their needs, and the effectiveness of e-learning in developing and assessing professional skills, have been undertaken at the curriculum design stage.

2.4 Assessment procedures

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.

2.4.1 Formative assessment

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. Formal items may well have 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

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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 networking sites 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.

2.4.2 Summative assessment

Procedures for summative assessment need to be:

- explicit (i.e. 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)
- fair (i.e. the nature of the assessment should not favour or disadvantage any particular student or group of students)
- valid (i.e. the assessment should be an effective test of the achievement of the particular learning or skills outcome(s) under consideration)
- reliable (i.e. the procedures for assessing performance and allocating marks should be internally consistent - with respect to time, place, and the markers involved)
- plural (i.e. 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

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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 given marks for the quality of the reviews they provide. Marks can also be given for how students 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.

Indicators

- The institution's processes for curriculum design leads to an appropriate balance of formative and summative assessment, taking advantage of the opportunities of online assessment for providing timely feedback to students.
- Assessment processes are well documented and all those involved in marking are trained in their role, work to common marking schemes and are subject to effective monitoring.
- All involved in assessment are aware of the particular problems of the identification of the work of individual students, and appropriate security arrangements are applied to summative components of continuous assessment and examinations.

At excellence level:

- Innovative assessment approaches, such as online collaborative work, peer assessment and self-assessment, form a part of the institution's practice in this area.

3 Course design

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, personal development, etc. and will usually be a combination of these.

The development of each course should include a clearly documented course specification which sets out the relationship between learning outcomes, learning activities and assessment. A course may include a blend of e-learning and face-to-face components; the choice of components should take account of appropriate assessment methods, levels of interactivity and provision of 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.

Benchmarks

- 10 Each course includes a clear statement of learning outcomes in respect of both knowledge and skills. There is reasoned coherence between learning outcomes, the strategy for use of e-learning, the scope of the learning materials and the assessment methods used.
- 11 Learning outcomes determine the means used to deliver course content. In a blended-learning context there an explicit rationale for the use of each component in the blend.
- 12 Course design, development and evaluation involve individuals or teams with expertise in both academic and technical aspects.
- 13 OER and other third-party material is selected with regard to learning outcome, tailored if necessary for fit to the learning context, and integrated with other learning materials. These materials are subject to the same review processes as other course materials.
- 14 E-learning materials have sufficient interactivity (student-to-content or student-to-student) to encourage active engagement and enable students to test their knowledge, understanding and skills.
- 15 Independent learning materials provide learners with regular feedback through self-assessment activities or tests.
- 16 Courses conform to explicit guidelines concerning layout and presentation and are as consistent as possible across a programme.
- 17 Courses provide both formative and summative assessment. Assessment is explicit, fair, valid and reliable. Appropriate measures are in place to prevent impersonation and/or plagiarism, especially where assessments are conducted online.
- 18 Course materials, including the intended learning outcomes, are regularly reviewed, up-dated and improved using feedback from stakeholders as appropriate.

3.1 Educational strategy

Decisions about the use of e-learning in particular contexts should be made on the basis of providing the most effective means of achieving the learning outcomes. 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.

3 Course design

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.

3.1.1 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, but learner support and assessment require human intervention.
- Collaborative learning: Various online social networking 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 e-learning and levels of support needs to be fit for purpose.

Indicators

- Staff understand the advantages and disadvantages of using e-learning for knowledge and skills development in particular course contexts.

At excellence level:

- Understanding of the relationship between educational design and e-learning components is widespread and evidence-based.

3.1.2 Blended learning models

The earlier section on '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 e-learning 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.

Indicators

- Fitness for purpose drives decisions on the selection of teaching and learning components. The blending is such that different methods and media are well chosen within and between courses, both in distribution over time and extent of use.

At excellence level:

- There is extensive institutional experience of delivery using blended learning and this experience is widely shared through the organisation.
- Well informed decisions on the use of teaching and learning components are made routinely and reflect institutional policies regarding the development of learner knowledge and skills.

3.1.3 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.

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.

Indicators

- Access to tutors is provided on a regular and sufficient basis, known to both tutors and learners.
- At the minimum level of engagement tutors provide learners with timely expert advice on course issues or materials and individual feedback on assignments within a stated response time.
- Tutors are able to use a variety of means (e-mail, telephone, VLE tools etc.) to interact with learners both individually and in groups.
- The course design requires tutors to monitor learners' progress on a regular and on-going basis and to contact learners to discuss progress.

At excellence level:

- Tutor-learner and learner-learner interaction is integral to the educational design.
- Where a Virtual Learning Environment is deployed, this fully supports the range of interactions needed, including individual and group interactions.

3.1.4 Independent learning materials

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 independent 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, either repositories of Open Educational Resources (OER) 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.

Indicators

- The availability, function and purpose of independent learning materials is clearly defined and communicated to students.
- Self-paced materials incorporate extensive embedded testing of learning outcomes.
- Materials have specified embedded learner support and self-assessment elements.

At excellence level:

- Materials demonstrate high levels of student activity providing a rich learning experience.
- Automated assessment elements provide remedial teaching in response to student performance.
- The institution has a policy for use of independent learning materials from a number of quality assured sources, including OER.

3.2 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.

3 Course design

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, personal development, *etc.* and will usually be a combination of these. 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 e-learning 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.

3.2.1 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 acquisition and skills development.

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 may provide information on the role of each course offered by the institution.

Indicators

- Course planning and approval takes place within a structured curriculum framework.
- The objectives and learning outcomes for the course and its methods of assessment are compatible with those of courses delivered by other means.
- The rationale for use of e-learning and the level of support provided is clear to staff and learners alike.

At excellence level:

- Course learning outcomes and skills acquisition are mapped to an institutional framework.
- The role of the e-learning course in the programme as a whole is set out clearly and comprehensively in student handbooks/guides

3.2.2 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.

3 Course design

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.

Indicators

- Students' expected prior knowledge and competencies have been considered and requirements made explicit.
- Sources of expertise have been identified.
- Key aspects of the course and learner context are researched and specified.
- Detailed prerequisites and student learning outcomes (both knowledge and skills-based) are specified.
- There are clear statements regarding the use of e-learning within the course.

At excellence level:

- Course design, development and evaluation is conducted by teams bringing expertise in subject domain, media use, instructional design, technical competences.
- The course design process includes mechanisms for trialling or evaluating materials with students, and incorporating their feedback.
- The importance of appropriate interaction (synchronous or asynchronous) between learners and with tutors is reflected in the design of the course.
- Analysis of course and learner context is conducted within an institution-wide framework.
- Pre-requisites and student learning outcomes are developed within an institutional, or national framework, facilitating student mobility between courses, departments and institutions.
- Each course defines its use of e-learning within an institutional framework.

3.2.3 Learning design

Student interaction with course material is a key factor in e-learning. 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

3 Course design

- 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 now available to support the learning design process and the sharing of learning designs with colleagues.

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

Indicators

- The specification of course content demonstrates appropriate matching of e-learning media with educational objectives.
- The e-learning content is well structured with clear relationships between components and signposting of study routes through the course materials

At excellence level:

- The institution has effective mechanisms to share knowledge and experience in the design of course content and the consequent impact on student learning.
- E-learning content is designed to allow for updating and adaptation to new contexts.

3.3 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 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 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 components may be offered back to the OER community, contributing to the wide availability of high quality components.

3.3.1 Technical design

The Institution should provide a framework of technical, accessibility and presentational standards that apply to e-learning 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.
- Style sheets 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.

Indicators

- Course materials and other online services are designed to operate effectively on clearly specified equipment and connectivity platforms.
- The technical aspects take appropriate account of the locations and circumstances in which students may access the learning materials.
- Course materials complies with national and European standards on accessibility.

At excellence level:

- The institution provides course authors and course teams with extensive support on the technical aspects of course design.
- The institution has implemented a clear strategy for the technical requirements for student access to e-learning.

3.3.2 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.

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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:

- Elements such as font, text, placement and presentation should be consistent.
- Feedback cues should be available, e.g. the link changes colour when clicked.
- Navigation should be intuitive and consistent.
- The interface should comply with usability and accessibility requirements.
- Learning materials should be provided in alternative formats where possible.

Indicators

- Course materials and components have a consistent user interface, with a common use of styles, formats *etc.*
- All interfaces comply with applicable usability and accessibility standards.

At excellence level:

- The institution offers course teams a choice of interface tools, styles, formats *etc.* that allow selection appropriate to course needs whilst retaining operational efficiency and institutional identity.

3.3.3 E-learning components

A course will contain a number of e-learning components 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 e-learning components 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 components 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 components. It remains the responsibility of academic leaders to rule on matters of teaching and content.

E-learning components should:

- conform to usability and accessibility standards
- where appropriate, conform to metadata standards
- be relevant, accurate, appropriate and clear
- be designed for regular updating

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- be reviewed periodically to ensure they continue to meet program standards
- be appropriately interactive (either student-computer or student-student)
- comply with legal requirements e.g. copyright issues be identified and documented.

Indicators

- The e-learning components are judged to be fit for purpose by students and external assessors.
- The e-learning components used in a course provide a range of learning experiences for students and are adequately interactive.

At excellence level:

- The e-learning components are acknowledged to be of high standard by students, academic peers and media professionals.
- The e-learning components offer diversity in the learning experiences provided and enables students to fulfil learning outcomes in a stimulating environment.
- The e-learning components can be used flexibly in contexts other than their initial application.

3.3.4 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 reverted and updated. However, some rights may still be 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 components (and perhaps customising them as appropriate) rather than developing new material from scratch. The OER components 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 reputation or the '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 components 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:

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- 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

Indicators

- Course materials obtained from OER are judged fit for purpose by students and external assessors.
- There is a principled approach to judging the quality of material obtained from an OER repository.
- There is a process for tracking intellectual property rights associated with e-learning components.

At excellence level

- E-learning components are contributed to repositories as OER.

3.3.5 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.

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- Clear mapping of dependencies in the production pathways.
- Establishment and use of protocols for version control.
- Templates for contracts where development is sub-contracted 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.

Indicators

- The production of the course is progressed using appropriate levels of project management.
- The roles of individuals within the project team are well defined and all recognise their professional interdependence.
- Those responsible for project management make timely and appropriate decisions.

At excellence level:

- The institution operates a production management system that provides tools and information essential to monitoring course materials production.
- Well established protocols and contracts facilitate project management of course components commissioned from third party individuals or organisations.
- The institution has extensive information on the costs of course materials production.

3.4 Assessment

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 Sections 2.4.1 Formative assessment and 2.4.2 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.

3.4.1 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.

Indicators

- Student assessment, both summative and formative, is considered as an integral part of the course design process.
- The course provides timely opportunities for students to verify their progress towards achieving learning objectives.
- Appropriate measures are in place to ensure fairness and consistency in marking, and timely feedback to students. This is monitored on a regular basis.

At excellence level:

- Staff development programmes in online assessment are provided.
- There is a demonstrable institutional commitment to improve the assessment of courses, by monitoring tutors' marking and by using feedback from students and tutors.

3.4.2 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 e-learning 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

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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.

Indicators

- Examination procedures for e-learning courses comply with institutional examination procedures and do not disadvantage e-learning students.
- Adequate identity checks guarantee the integrity of the examination process
- Software is used to detect plagiarism and collusion.

At excellence level:

- The institution operates examination policies that have been specifically designed/adapted to cater for the needs of e-learning courses.
- Development of fully online examination processes is an objective for the institution.

3.5 Course evaluation and approval

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.

Indicators

- Course design and materials are subject to independent review and there is evidence that the course designers respond appropriately to reviewer comments.
- There are appropriate feedback mechanisms in place to support the improvement and development of the course.

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At excellence level:

- The institution operates an independent review system whose results are used widely, alongside its own feedback systems, to improve the design of subsequent courses.
- Monitoring of student activity is used to highlight areas for improvement.
- All course materials are developed and tested using industry standard quality management procedures.

4 Course delivery

Course delivery encompasses the Virtual Learning Environment and/or other interfaces through which students receive their course materials and communicate with fellow learners and staff.³ These systems represent a very significant investment of financial and human resource in their acquisition and ongoing 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.

Benchmarks

- 19 The technical infrastructure maintaining the e-learning system is fit for purpose and supports both academic and administrative functions. Technical specification is based on stakeholder requirements and involves realistic estimates of system usage and development.
- 20 The systems for communication and provision of information are secure, reliable and assure appropriate levels of privacy. Measures are in place for system recovery in the event of failure or breakdown.
- 21 Appropriate provision is made for system maintenance, monitoring and review of performance against the standards set. These standards are updated when necessary.
- 22 E-learning systems provide a choice of online tools which are appropriate for the educational models adopted and for the requirements of students and educators.
- 23 Information about how to use the institution's e-learning systems and services is provided to all users in a logical, consistent and reliable way.
- 24 Institutional materials and information accessible through the VLE are regularly monitored, reviewed and updated. The responsibility for this is clearly defined and those responsible are provided with appropriate and secure access to the system to enable revision and updating.

³ 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 interface, in a well developed system a student should be able to access all services via a single log on.

4.1 Technical infrastructure

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.

4.1.1 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. Institutional decisions should 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.

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.

Indicators

- The technical infrastructure is well defined and supports institutional e-learning objectives.
- The system meets the equipment and connectivity requirements of student users.
- Any necessary contractual relationships with partners or service providers are in place and well defined.

At excellence level:

- The strategic plan defines the current and future technical needs of the institution.
- The institution undertakes regular technical foresight activity to inform decision making.

4.1.2 Technical infrastructure management

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

4 Course delivery

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.

Indicators

- There are clear operating standards and management processes.
- Operating standards are implemented effectively.
- There is sufficient server capacity and bandwidth to handle the planned usage.
- The technical requirements of the system are monitored on a regular basis.
- E-learning requirements are integrated with the longer term IT infrastructure plans of the organisation.

At excellence level:

- The institution sets standards for the operation of its technical infrastructure that are benchmarked against other major online customer service providers.
- The future planning of technical infrastructure for e-learning is a major aspect of organisational ICT planning.

4.2 Virtual learning environment

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 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.

4.2.1 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);

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- 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 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 networking (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.

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.

Indicators

- The e-learning system is appropriate for the type of learning and the requirements of learners.
- The system provides robust privacy, and this applies to personal data and interactions, in addition to academic and financial transactions.
- The e-learning system and resources demonstrate ease of use for the full range of target users, including people with disabilities.
- Provision of the e-learning system is protected by robust contractual arrangements and contingency planning.

At excellence level

- The e-learning system is under constant review in the light of technical and educational developments.
- The institution contributes to the development of e-learning systems.

4.2.2 E-learning material provision

E-learning resources should be developed or selected to meet the requirements of target users (learners and teachers). The e-learning system should address the needs of users for easy access and high quality interaction with the learning materials. The e-learning 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.

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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.

Indicators

- The content is presented in a learner-oriented fashion.
- Policies for delivery of materials are consistent with the technical infrastructure available to students.
- The e-learning materials exploit opportunities for interactivity.
- The VLE supports rich interactivity.
- Course materials and delivery systems are technically tested under realistic conditions.
- There is a system for securing and recording the rights necessary for use of third party resources in teaching materials.

At excellence level

- The institution has in place policies for internal reuse of materials and is active in the OER movement facilitating the sharing of materials between institutions and individual learners.

4.2.3 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.

Indicators

- Students contemplating study by e-learning are adequately informed of the courses available to them and the requirements for study.
- Learners are provided with full information on sequence, timing, options within their intended programme of study.
- Details of course delivery are provided to learners and staff in a clear and accessible way.
- Responsibilities of the different staff groups (teachers, tutors, etc) involved are specified and clear to learners.
- The provision of information is managed consistently at programme level.

At excellence level:

- The institution has a comprehensive policy for the provision of online information to prospective, current and former students

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- There are institutional templates for the presentation of information and these are adhered to by all programmes and courses
- There is clear responsibility for overall management of information provision across all programmes

4.2.4 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.

Indicators

- The performance of the e-learning systems is monitored and opportunities for performance improvement identified.
- Performance of mentors, tutors and moderators is monitored regularly.
- Problems and issues are acted upon promptly.
- Longer term improvements are identified.

At excellence level:

- Provision is evaluated and updated on a planned and appropriate basis.
- There is an institutional policy of performance analysis and survey that informs future developments.

4.2.5 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.

Indicators

- Assessment methods are appropriate to the programme and topic.
- Learners are informed about the conditions and outcomes of the assessment before and after completion.
- Appropriate arrangements are made for security of assessments.
- Data protection and privacy procedures are in place.

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- Feedback is relevant, contains appropriate depth and is timely.
- Progress details are available to the individual involved.

At excellence level:

- The institution invests in the development of online assessment tools and techniques.
- There is evidence of research and development of online assessment and the dissemination of these across the institution.

4.2.6 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.

Indicators

- Distribution systems for physical materials operate effectively and meet student needs in terms of time and cost.
- Online material are provided in alternative formats to meet the accessibility needs of individual students.

5 Staff support

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 e-learning 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.

Benchmarks

- 25 Staff in academic, media development and administrative roles can adequately support the development and delivery of e-learning components.
- 26 The institution ensures that appropriate training and support is provided for staff and that this training is enhanced in the light of technological and educational developments.
- 27 Educational research and innovation in e-learning are regarded as high status activities, and are promoted by career development incentives.
- 28 There are mechanisms for the dissemination of good practice based on experience and research on e-learning.
- 29 The institution ensures that issues of staff workload, and any other implications of staff participation in e-learning activities, are taken into account when managing courses or programmes.
- 30 Adequate support and resources (e.g. technical help desk and administrative support) are available to academic staff, including any affiliated tutors/mentors.

5.1 Technical

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.

5.1.1 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 may be provided by a helpdesk service.

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 on all 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 student learning.

Indicators

- All staff have access to technical support services in selection, acquisition and maintenance of their ICT equipment and networks.
- Technical services operate to clear and agreed standards for provision of staff support.
- The infrastructure supports teachers at all times with online access to materials, administrative data and communication facilities.

At excellence level:

- There is an institutional plan for the provision and future direction of the technical support function.
- Technical departments collaborate with academic, media development and administrative staff in the development of strategies and plans that take into account the potential of emerging technologies.
- A suite of online technical support services is available to staff working remotely.

5.1.2 Technical training

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

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

Indicators

- Responsibility for the provision of training is clearly defined and adequate resources are allocated.
- Newly appointed staff are provided with induction in the use of software and systems.
- The introduction of new systems or equipment is supported by adequate training for all users.

5 Staff support

At excellence level:

- There is an institutional plan for the provision of training in the technical aspects of e-learning.
- The institution provides access to online self-help training materials augmented by help desk services.

5.2 Educational

The provision of support for staff in the educational aspects of e-learning 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.

5.2.1 Educational support

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

Dispersed expertise within an institution may 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.

Indicators

- The institution offers to its staff an online information service on uses of e-learning.
- Training courses are available for staff engaged in e-learning activities.
- Staff are encouraged to provide mutual support, in cross-professional groups, in the development of e-learning materials.
- Staff are supported in the educational uses of digital technologies (including web oriented tools) in teaching.
- Staff employed as tutors and in other student support roles are appropriately briefed, trained and supported in the educational techniques incorporated in courses.
- Staff have opportunities to provide and receive feedback on their experience of teaching a course.

At excellence level:

- The institution has recognised structures for the dissemination of best practice in relevant educational techniques.

5 Staff support

- There is an institutional plan for the development of educational support services.
- The institution has means of showcasing best practice in online teaching and learning.

5.2.2 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.

Indicators

- Staff are encouraged to take part in new teaching and learning developments.
- Professional development seminars and symposia on teaching and learning issues are organised (and well attended).
- Internal and external publication on teaching and learning issues related to e-learning is encouraged and rewarded.
- Internal secondments and cross-departmental working are used as mechanisms for sharing expertise in teaching and learning techniques.
- The experience of tutorial and other support staff is valued and acknowledged by the institution.
- Student feedback is used extensively in review of new teaching and learning developments.

At excellence level:

- Teaching and learning development is widely respected throughout the institution and recognised through reward and career development structures.
- The institution has a group of staff who are committed to the development of e-learning methods. These staff may operate as a self contained unit or as a distributed group.
- The institution encourages and supports participation in inter-institutional collaboration and exchange programmes related to teaching and learning development.

5.3 Resources

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.

5.3.1 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.

5 Staff support

Information on the performance of current and previous e-learning 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.

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.

Indicators

- The technical infrastructure supports teachers by providing online access to materials, administrative data and communication facilities.
- The library function within the institution is adapted to the provision and maintenance of online resources for staff and students
- Support is available for course design staff in locating and evaluating online resources for student use.

At excellence level:

- The institution has staff committed to the maintenance of historical records of course and student performance and their analysis to assist in programme development and delivery.
- The institution has processes for indexing and archiving its e-learning materials for evaluation and potential re-use.
- Development teams are routinely able to access previously developed materials and OER, and consider their potential for re-use.

5.3.2 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.

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.

5 Staff support

Indicators

- The administrative impact of e-learning and e-learning systems on the workloads of all staff groups has been assessed and adjustments made as required.
- Administrative support at study centres facilitates effectively the teaching function, meetings with students and other stakeholders.

At excellence level:

- All staff using the online administrative system report that it operates well.

5.3.3 Career development

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

Indicators

- Inputs by staff to e-learning programmes are recognised in career progression structures.

At excellence level:

- The institution has reviewed its careers progression structures to take account of new roles and functions associated with e-learning.
- Criteria for progression and promotion from existing roles are reviewed to ensure that e-learning contributions are appropriately reflected.
- There is evidence that the criteria are actively used by decision makers in the career progression process.

6 Student support

Student support services are an essential component of e-learning provision. Their design should cover the pedagogic, resource and technical aspects that affect the online learner. Support services should be accessible in the first instance via the student's homepage or other entry route to the institution's online learning system. Students should be provided with information about their specific courses and the range of generic services available.

Students are likely to be working to flexible schedules. Static information such as course specifications on web pages are always available but help desk and advisory services should also be provided at times appropriate to student need.

Students should be provided with an identified academic contact who will provide feedback and support. Students may also be supported through online communities, through either an internal VLE or possibly via external social networking sites.

Benchmarks

- 31 Students are provided with clear and up-to-date information about their courses including learning and assessment methods.
- 32 Students are provided with guidelines stating their rights, roles and responsibilities and those of their institution. Guidelines of specific relevance to e-learning include provision of hardware, information on accessibility and expected participation in collaborative activities.
- 33 Online social networking opportunities are provided in order to build and support student communities. This may be achieved using the institution's VLE or through external social networking sites, as appropriate.
- 34 Students have access to support services including technical help desk, administrative support and course choice advice.
- 35 Students have access to learning resources including online library access, study skills development and a study advisor.

6.1 Technical support

Effective operation of the institution's online learning environment is the key component of technical support that affects students. Continuous availability should be the target.

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 help desk and other advisory services.

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

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software. Students should be aware of the nature of services available and the means of accessing them.

Indicators

- The online service is available and fully functioning 24 hours per day, seven days per week over the learning period, except for planned maintenance.
- Maintenance and updating work temporarily preventing use of the online service is performed as quickly as possible, and at the time of lowest student demand, with all users clearly notified in advance.
- Students and prospective students are clearly informed on: what kind and level of personal equipment they require; what technical support is available; and when and from whom it can be obtained.
- A technical help desk service is provided.

6.2 Study skills support

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 ideas of self-regulated, active and collaborative learning.

There are benefits associated with an institution-wide approach to study skills support. For example, as new software and communication systems become available, experience in their use can be disseminated broadly across the institution.

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

6.2.1 Analysis of support needs for different user groups

The institution should monitor the needs of their students in order to inform planning of support services for e-learners. Different student groups may display differing experience of relevant technologies and learning methods. Although younger students may appear to be 'digital natives' who are very experienced with technology, they will nevertheless need support in using technology to best effect for learning.

Rapid developments in ICT and software lead to rapid changes in prior experience that may have significant impact on student needs in a period as short as one or two years.

Indicators

- Course entry requirements match the prior skills and knowledge of most prospective students. Support for students who lack required skills and knowledge is provided by appropriate preparatory course material.
- The support needs for the main learner groups have been analysed and addressed.

6.2.2 Study skills guidance

Students should be aware of the range of study skills support services available to them and the routes through which they can gain access to these. Support may be

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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 given to develop the study skills of 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.

Indicators

- Students are informed through course information of the study skills they will be expected to use and develop during their study.
- Materials for the acquisition of required learning skills are built into the course or are available to students in advance.

At excellence level:

- The provision of relevant pedagogical advice and guidance is an integral part of the course or programme planning process.
- Students have access to learning skills advisors and other resources to augment or reinforce their learning skills.

6.2.3 Developing e-learning skills

Support for the development of e-learning skills can be an important contributor to student success. Potential students should have the opportunity to learn what will be expected of them and what services will be available to help them develop the necessary skills. Responsibility for this aspect may be managed at institutional level by a library or information services division.

Indicators

- Students are informed of the expectations on them in respect of e-learning skills prior to the start of their programme. Examples of study materials are available at this stage.

At excellence level:

- Opportunities are available for students to self-test their e-learning skills prior to the start of a course and to undertake preparatory study to refine these skills as necessary.

6.3 Resources

Many aspects of student support are provided via access to resource materials and services. The library service is an aspect of resource provision that is widely available to campus based students; extension of the service to online students (via an e-library service) is essential for effective delivery of e-learning.

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

- Resources and systems to facilitate the development of online learner communities. These might be discussion forums, social networking environments or other collaborative online spaces provide or enabled by the

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institution. Alternatively, or additionally, the institution may adopt the use of external social networking facilities (such as Facebook).

- A network of study centres for face-to-face teaching as part of blended provision. However, the provision of face-to-face sessions may place restrictions in time and place that detract from the effectiveness of study for some groups of students.

6.3.1 Library and information sources

Institutions providing e-learning courses have a duty to ensure that all students can access the information sources necessary for successful completion of the course. In an e-learning context much of this can be built in to specific course materials, for example by providing a 'classroom library' or virtual reference service that provides a customised view of the online library containing relevant links and online databases. However, students may need access to additional sources which provide complementary or contrasting perspectives.

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 based students and staff.

Indicators

- Online library resources are available to all e-learning students.
- Resources are available for delivering training to students in information literacy and the use of online materials.
- Library resources are accessible out of normal office hours.

At excellence level:

- The institution is able to provide an equivalence of library service for its e-learning and its campus-based students.

6.3.2 Learner communities

Creation of online communities of students is important as it reduces the isolation that may be experienced by online learners and encourages 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.

Online community spaces, such as discussion forums, provide one way to gather informal feedback on students' experience of a course. They also 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.

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 formed by students (or staff) in external social networking environments such as Facebook 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).

Indicators

- The institution is committed to enabling the establishment and proper functioning of communities of e-learning students via its VLE or other online communication environments.
- This functioning supports:
 - learning interaction between individuals and within groups;
 - social interaction between students;
 - feedback on students' experiences of their programme.
- The institution makes clear where participation in collaborative activities is encouraged or required.

At excellence level:

- To support communities of learners the institution makes appropriate use of asynchronous tools (e.g. discussion forums, wikis, blogs, social networking sites) and synchronous tools (e.g. video-conferencing, real-time chat).

6.3.3 Role of study centres

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.

The institution may therefore operate a network of study centres at which the functions listed above can take place. 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.

Indicators

- The institution has a clear policy regarding the role of any study centres in its provision of e-learning and has plans for resourcing and management of the centres.
- Programme designers make appropriate decisions on the use of study centre resources in programme plans and communicate these clearly to students.
- Students are clear about the locations of study centres, the facilities and support which they offer, and the occasions during their programme at which they will have to attend a study centre.
- Staff at study centres understand the contribution that they are expected to make to student progress on registered courses and student community development.

6.3.4 Course choice

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.

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.

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

E-learning students are likely to use online access to investigate programme availability. A curriculum map and advisory notes should be available to potential students from programme launch.

Indicators

- Each study programme and course has a description of its content, learning and assessment methods used.
- Navigation through possible course combinations is facilitated by online curriculum maps.
- Advisory notes are available informing students of the consequences of particular choices.
- Advice and counselling over choice of courses and progression through a programme is provided.

6.3.5 Administrative support

The majority of administrative functions should be fulfilled online without the need for direct human intervention. Online systems should cater for: registration on programmes and courses; payments; study timetables; access to student records etc. All systems should operate at appropriate levels of security to ensure confidentiality and safety. 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 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.

Indicators

- There is an online student guide to the institution's student administration system.
- There is provision for human intervention in administrative processes and these interactions are appropriately initiated and delivered.
- There are procedures to handle and resolve any difficulties or disputes which may arise.

6.4 Support staff

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 and/or generic in nature. The roles may include tutors, mentors, counsellors, librarians, advisors, and others. The requirements for particular types of human interaction and intervention should be part of the institution's planning process and incorporated within curriculum and course design.

Institutional policies should define the service standards for this support. The expected level and frequency of 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 in order to carry out their functions effectively.

6.4.1 Resource planning

Planning at institutional, programme and course level should take account of the need for satisfactory provision of support services, whether through course-specific tutors/mentors or through more general services such as counselling, career guidance *etc.*

Estimates of the demand for services should be developed. These should underpin planning activities and should be revised in line with experience gained through operation of services.

Indicators

- The institution's planning process includes an informed analysis of the human support functions needed for successful operation of the e-learning programme.
- This covers requirements for mentoring, tutoring, coaching, counselling, assessment, management, advice and guidance, and includes academic, professional and other specialist staff inputs.
- There are mechanisms in place for the training and development of staff undertaking the above functions.

At excellence level:

- The institution works to staffing norms and levels of staff resource (*e.g.* staff-student ratios) which are informed by practice elsewhere and adjusted in the light of experience and feedback.
- Staff workload is managed carefully, to ensure that supporting e-learning and e-learners does not create unreasonable demands on staff.

6.4.2 Role definitions

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

Where there is a transition from either face-to-face or an earlier form of distance learning to e-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

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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.

Indicators

- The job descriptions for all staff contain specific references to responsibilities for learner support.
- Student materials describe the roles undertaken by those staff categories engaged in student support activities, and the levels of support which can be expected by students.

GLOSSARY

Accessibility

The extent to which a course is designed to allow disabled students to take part in all the activities available to their non-disabled peers and achieve all the learning outcomes. This includes technical aspects such as conforming to accessibility standards, the provision of alternative formats, and processes for making reasonable adjustments to accommodate individual needs.

Availability

The percentage of time in which a computer system is available for use and not unavailable due to failure or scheduled maintenance.

Blended learning

A mix of e-learning with traditional teaching and learning practices.. Typically there is a combination of face-to-face interaction with online learning.

Cloud computing

The provision of computer services running on distributed servers provided by a third party, in contrast to computers provided by an institution. Cloud computing makes use of computing resources (hardware and software) delivered as a service over a network (typically the Internet). It entrusts remote services with a user's data, software and computation.

Collusion

A form of **plagiarism** where there is inappropriate collaboration between students or the knowing exchange of answers.

Course

A well-defined module of study, typically of a term or semester in duration. In this manual, a course is understood to be synonymous with a **module** and not with a qualification.

Curriculum

A broad term covering both academic and subject requirements and the processes for organising and managing the teaching and learning.

Distance learning

A mode of study that allows the learner to study most or all of a course without attendance at a campus-based institution.

E-learning

Learning facilitated through the use of information and communication technologies. There are several facets to e-learning including hardware (computers, mobile phones, digital cameras, etc), digital resources (the Web, materials presented via Virtual Learning Environments, online libraries, etc), software (tutorials, 'office' packages, etc), and online communication tools (email, chat, forums etc).

Evaluation

GLOSSARY

A systematic appraisal of the effectiveness of a teaching or learning component, carried out for the benefit of the teacher and institution. It should be contrasted with **assessment** activities which are carried out to gauge the progress of an individual student's learning.

Feedback

Advice and commentary given by a teacher on examinations, coursework, or classroom activity. This can be oral or written and helps learners to understand their progress.

Flaming

In online communication (e.g. discussion forums), exchanges of increasingly angry and offensive messages, often caused by a breach of netiquette.

Flexibility

Provision of study such that students can choose their own time, pace and place of learning. It also describes how programmes of study may allow students to choose courses or topics of particular interest to them.

Formative assessment

Assessment aimed primarily at determining the strengths and weaknesses of a student's work, with the objective of improvement. Formative assessment demands feedback to the student in some form and may, but will not always, contribute to summative assessment.

General educational objectives

Educational objectives of a programme of study which are not subject- or field-specific but of a more general nature and which usually characterise the level of study involved. At degree level, for example, these will include developing powers of independent judgement and critical reflection.

Independent learning material

Material designed for learners to study with minimal or no support from a teacher. Also known as self-study materials.

Interactivity

Methods of teaching and learning that include techniques in which learners communicate with each other and with the tutor. Interaction may be synchronous (e.g. telephone) or asynchronous (e.g. e-mail). It is also used to refer to the way in which learning materials themselves are designed to require the active participation of learners.

Key skills

Those essential skills which people need in order to be effective members of a modern society and a flexible, adaptable and competitive workforce. Examples of key skills are communication, collaboration and group working, literacy, numeracy, use of information technology and knowing how to learn.

Learning analytics

An emerging approach that uses the techniques of web analytics and social network analysis to collect data on students' use of a VLE in order to visualise and analyse learning interactions.

GLOSSARY

Learning design

The process of planning, structuring and sequencing learning activities.

Learning management system

A system that focuses on the administration, tracking and recording of learning or training. In higher education contexts, these functions are often subsumed into a **VLE**.

Learning outcomes

Statements indicating what a learner should have achieved in respect of both knowledge and skills at the end of a given course or programme.

Learning platform

A system that focuses on the delivery of the content and tools needed for learning; a synonym for **VLE**.

Mentor

A person who acts as an adviser to a learner. The term is especially used in work-place learning environments to cover professional advice. The activity is called mentoring.

Mobile learning

E-learning through mobile devices such as smartphones or tablets. More specifically, mobile learning activities can be designed to make use of a student's immediate context and surroundings, for example offering information about an artist while visiting an art gallery.

Moderating

Facilitating discussions in forums and other online systems, including ensuring acceptable behaviour. Moderators have privileges that allow them to edit or delete messages that contravene a code of conduct. They may also have a role in guiding and shaping discussion, helping students to engage in useful and appropriate interactions.

Module

A separate and coherent block of learning, usually over a term or semester. Part of a modular programme of studies where the programme is divided into a range of similar sized segments.

Netiquette

The informal rules of good behaviour online that would not be covered by a formal code of conduct. Text-only media lack clues such as expression or tone of voice used in face-to-face conversation, so greater effort should be made to keep online conversations positive and constructive.

Online

A term describing activity that requires a connection to the Internet.

Open Educational Resources

Materials offered freely for use by teachers and learners. 'Freely' in this context means without charge and with few or no restrictions on the way material can be adapted and reused.

GLOSSARY

Pedagogy

The theory and process of teaching.

Peer assessment / review

Assessment or review of students' work carried out by other students.

Plagiarism

Using the ideas or writings of another as if they were one's own, (i.e. without acknowledging the original author).

Programme

A sequenced set of courses or modules representing a student's total study requirement and usually leading to an award on successful completion.

Reliability

(of a computer system) The ability of a system to continue to perform correctly, both in routine and unusual circumstances.

(of assessment) The consistency and repeatability of assessment.

Semantic web

A set of technologies and metadata standards intended to allow machines to 'understand' the meaning of information in web pages.

Social networking site

A web site (such as Facebook) devoted to supporting and representing links between individuals based on real-life connections or shared activities and interests. Such sites may be used to support online communities.

Stakeholder

A broad term to include students, teachers, educational managers, employers, etc, any of whom will have a legitimate interest in aspects of the learning provision.

Study centre

Local facilities away from the main campus of an institution providing some facilities for study, such as meeting rooms for tutorials, collections of reference material, and computer access to the internet.

Summative assessment

Assessment (often taking place at the end of a course or programme) leading to the attribution of a grade or a mark to the student. The results of summative assessment determine whether a student progresses to the next stage of the programme or, on completion, gains an award.

Tutor

A teacher who provides instruction, academic advice or counsel to one or more students.

Transferable skills

Skills such as communication, problem-solving and teamwork that can be applied in different academic and work contexts.

Usability

GLOSSARY

The degree to which a computer system can be used effectively, efficiently and with satisfaction by its users.

Virtual Learning Environment (VLE)

A set of computerised systems or tools which allow controlled access by students to online course materials and the facilities needed to support learning. Typically, a VLE is accessed via the web and will contain tools for course/programme registration; content management, including access to external resources; student-student and student-tutor discussion; tracking student activity; secure submission of assignments; assessment; access to course/programme information; access to student support systems; etc.

Virtual Mobility

The use of information and communications technology as an alternative to physical mobility to allow students to study programmes from other institutions as part of an award of their home institution.

Vocational courses

Courses of study related to professional practice and labour market needs.