

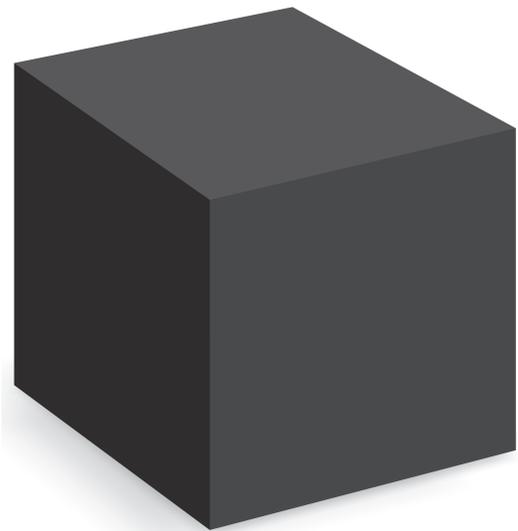
3 Course design

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.

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

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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

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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.

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.

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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

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- 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.

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

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(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 trialing 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
- 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.

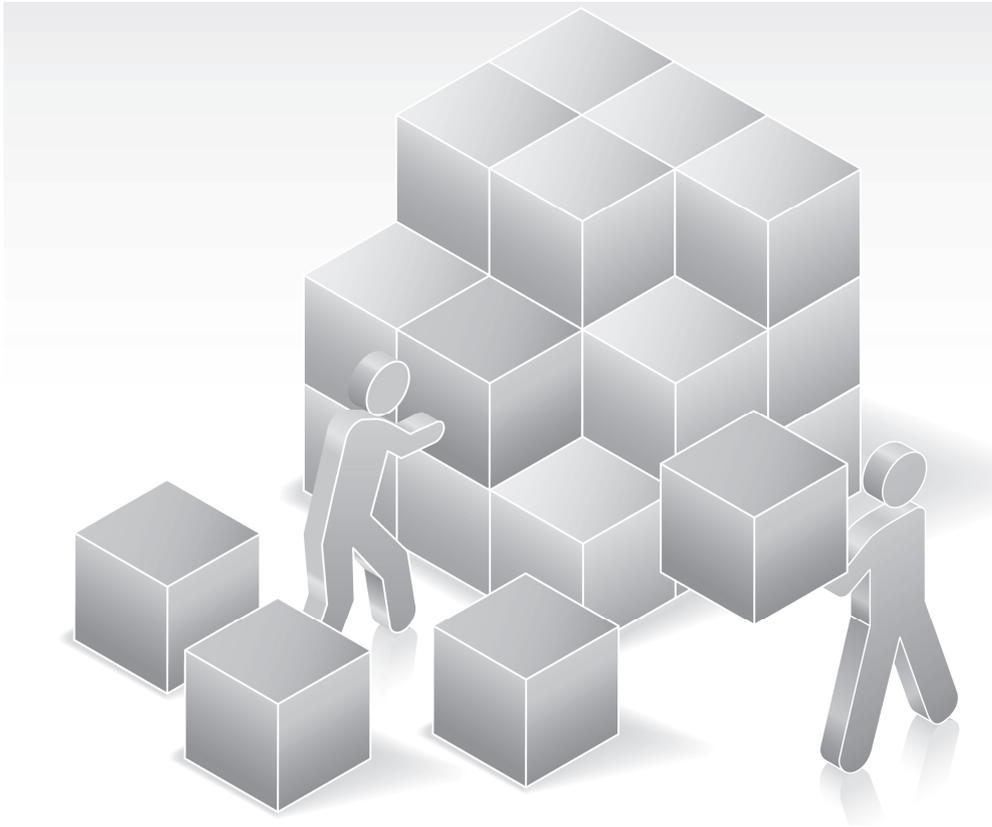
Inputs from several professions are desirable for the development of high quality e-learning materials. Effective interaction between key professionals is an important performance indicator.

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

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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

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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.

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- 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.

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.

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- Feedback cues should be available, e.g. the link changes color 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

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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
- 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 fulfill 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

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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:

- Format: conformance to standards and file formats
- Localisation: ease of adaptation to other languages, cultures, or contexts
- Discoverability: metadata, tagging

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- 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

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that associated with print based materials. The contents of this section present a comprehensive view of processes that may be involved with large-scale production, but in many instances a more agile and flexible management framework will be appropriate.

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

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

Particulars of the project management framework might include:

- Documentation of production processes and roles.
- Clear protocols for the transfer and handover of course materials between professional groups.
- Involvement of and support for all categories of professional staff engaged in materials development and production.
- Clearly established pathways for materials development, allowing for parallel and serial contributions by professional groups and other participants as necessary.
- Clear mapping of dependencies in the production pathways.
- Establishment and use of protocols for version control.

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- 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

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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 detect plagiarism and collusion; cross-referencing and correlation between performance on written examinations and on continuous assessment.

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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