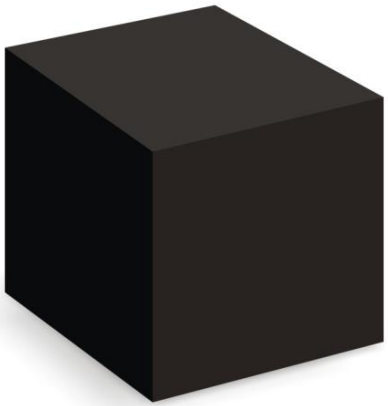
3 Course design

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 and personal development

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



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

Benchmarks

10 Each course includes a clear statement of learning outcomes in respect of both knowledge and skills. There is reasoned coherence between learning goals/outcomes, the teaching and learning activities, the learning materials and the assessment methods.

11 Learning outcomes determine the use of methods and course contents. In a blended-learning context there is an explicit rationale for the use of each element in the blend.

12 The design, development and evaluation of a course involves 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, student-to-student and student-to-teacher) 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 reviewed by expert educators prior to first use, and then regularly reviewed, up-dated and improved using feedback from stakeholders.

3.1 Educational strategy

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

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

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

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

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

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.
- Collaborative learning: various online social media tools can be used for online collaborative learning. Their use may, however, place constraints on flexibility of study and will require appropriate academic oversight.

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

Indicators

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

At excellence level

- A deep, evidence-based understanding of the relationship between educational design and e-learning activities is widespread among staff.

3.1.2 Blended learning models

The earlier chapter *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 activities. 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 activities 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.

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

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

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, phone, 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 self-directed learners throughout their professional lives.

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

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

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

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

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

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 and MOOCs.

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 and skills, integrated into vocational/professional competencies and personal development. The development of each course should include a clearly documented course specification which sets out the relationship between learning outcomes and their assessment.

The design of an e-learning course may be subcontracted to an outside agency (e.g. a consortium partner, a commercial 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 and skills acquisition, and the development of competencies.

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

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

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;
- an indication of the required study time.

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

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

Dependent on the scope and size of the course, authoring roles will be allocated to specific authors and media professionals may be commissioned to contribute to the development of course

materials. The authoring specification will indicate the outcomes expected.

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

Indicators

- Students' expected prior knowledge, skills and competencies have been considered, and requirements made explicit.
- Sources of expertise for course development have been identified.
- Key aspects of the course and learner context are researched and specified.
- Detailed prerequisites and student learning outcomes (knowledge, skills and competencies) are specified.
- There are clear statements regarding the use of e-learning within the course.
- The importance of appropriate interaction (synchronous or asynchronous) between learners and with tutors is reflected in the design of the course.

At excellence level

- Course design, development and evaluation is conducted by teams bringing expertise in subject domain, media use, instructional design and technical competences.

- The course design process includes mechanisms for trialling or evaluating materials with students, and incorporating their feedback.
- 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 and content 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 available to support the learning

design process and the sharing of learning designs with colleagues.

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

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 elements 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.

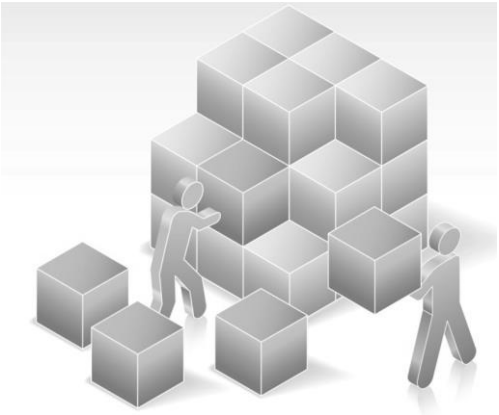
Development of a course may be a significant media and software development project and demands the application of project management techniques. These may be applied during initial course design, but are particularly important during the materials production phase.

Inputs from several professions are desirable for the development of high quality e-learning materials. Effective interaction between key professionals is an important performance indicator. Specialists in design of learning materials may be located in an educational development unit, library or information services unit dependent on the institutional policy and history.

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

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.
- Stylesheets and schemas should be used in order to provide consistency of presentation format for learners.
- Course developers should be provided with suitable authoring tools and a supportive environment to enable them to make effective use of these tools.

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.

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

Indicators

- Course materials 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. appropriate to course needs whilst retaining operational efficiency and institutional

identity.

3.3.3 E-learning elements and activities

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

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

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

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

E-learning elements and activities should:

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

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

Indicators

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

At excellence level

- The e-learning elements and activities are acknowledged to be of high standard by students, academic peers and media professionals.
- The e-learning elements and activities offer diversity in the learning experiences provided and enables students to fulfil learning outcomes in a stimulating environment.
- The e-learning elements and activities 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 reversioned 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 elements (and perhaps customising them as appropriate) rather than developing new material from scratch. The OER elements might range from single images to more extensive learning objects containing learning objectives, content and assessment. The resulting e-learning material should be judged under the same quality criteria as new material or bought-in material. However, an OER obtained from a repository may already have some assurance attached to it. The repository itself may carry some weight of the reputation or brand of an institution, user reviews and voting systems may offer recommendation, or the repository may offer a peer review stage prior to acceptance.

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

Learning material, either modified from existing OER or created from scratch, may be offered back to the community as further

OER. OER therefore have specific quality dimensions relating to reusability and openness in addition to the quality dimensions relating to content discussed above. These include:

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

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 resources.

At excellence level

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

3.3.5 Massive open online courses

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

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

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

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

3.3.6 Process management

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

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

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

Particulars of the project management framework might include:

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

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 and student feedback is used, on a continuous or cyclical basis, to highlight areas for improvement.
- All course materials are developed and tested using fit-for-purpose quality management procedures.
- Learning analytic data is used to gain insight into the success of aspects of e-learning design. This is used to improve the design of future courses.