4 Course Design

Benchmarks

11. Each course should include **a clear statement of learning outcomes** in respect of both knowledge and skills. In a blended-learning context there should be an explicit rationale for the use of each component in the blend.

12. Learning outcomes, not the availability of technology, should determine the means used to deliver course content and there needs to be reasoned **coherence between learning outcomes, the strategy for use of e-learning, the scope of the learning materials and the assessment methods used.**

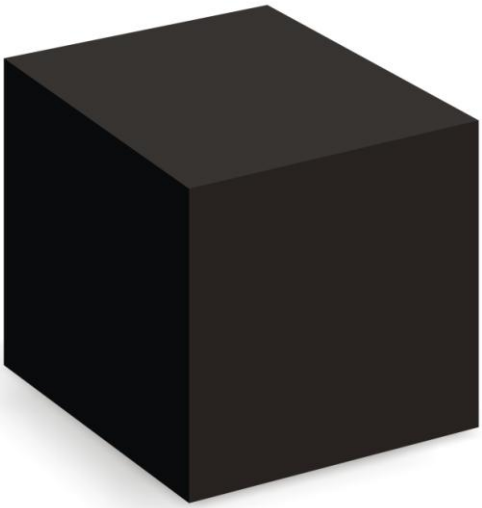
13. Course design, development and evaluation should **involve** individuals or teams with **expertise in both academic and technical aspects.**

14. Within e-learning components, learning materials should be designed with an adequate level of interactivity to **enable active student engagement** and to enable them to test their knowledge, understanding and skills at regular intervals. Where self-study materials are meant to be free-standing, they should be designed in such a way as to allow learners **on-going feedback** on their progress through self-assessment tests.

15. Course materials should conform to explicit **guidelines concerning layout and presentation** and be as consistent as possible across a programme.

16. Courses, including their intended learning outcomes, should be regularly reviewed, up-dated and improved using feedback from stakeholders as appropriate.

17. Courses should provide both **formative and summative assessment** components. Summative assessment needs to be explicit, fair, valid and reliable (see section 2.5.2). Appropriate **measures** need to be in place to **prevent impersonation and/or plagiarism**, especially where assessments are conducted on-line.



4.1 Pedagogic Design

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 prescribed learning outcomes, not on the basis of availability of the technology.

E-learning provides tools to support a range of pedagogic modes: highly efficient text and interactive media distribution to serve didactic approaches, resource rich environments for problem based learning and collaborative working environments for dialogue centred learning processes. It is expected that Pedagogic Design choices will vary with the subject and level of courses, an e-learning institution should provide for diversity of pedagogic approaches in its offering. There should be a clear rationale for the use of e-learning and the level of support provided. Pedagogic designers must resolve the tension between the ease of access offered by the anywhere, anytime availability of on-line e-learning delivery and the flexibility of pedagogic interaction offered by direct face-to-face contact with teachers inherent in the best of classroom based teaching.

4.1.1 Pedagogic Strategy

Establishing a pedagogic strategy 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 pedagogic model appropriate to the level and subject domain of the course.

Three broad pedagogic approaches make differing demands on the capabilities of e-learning systems:
Didactic learning: Efficient delivery of structured teaching materials, embedded testing and remediation can be achieved on-line allowing for flexible pace of study by independent learners working to self determined schedules.
Problem based learning: On-line 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: Tools for on-line collaborative working are widely available. Their use however places constraints on flexibility in place and time of study and appropriate academic oversight.
The majority of courses will utilise several pedagogic 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 understands the advantages and disadvantages of using e- learning for knowledge and skills acquisition in particular course contexts.

At excellence level:

Understanding of the relationship between pedagogical design and e- learning component methodologies is widespread and evidence- based.

4.1.2 Blended learning models

The pedagogic approach currently referred to as blended learning advocates the use of a number of media for curriculum delivery and student support. For example, students may study e-learning materials but attend occasional face to face seminars to facilitate academic community building and practice of interpersonal skills.
Rationale for the blend should be clearly communicated to students in course documentation.

Indicators

Fitness for purpose should drive decisions on the selection of pedagogic components. The blending should be 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 pedagogic components are made routinely and reflect institutional policies regarding the development of learner knowledge and skills.

4.1.3 Roles of Tutors and Mentors in e-learning

In online delivery instructors/tutors/mentors undertake a vital teaching role that differs somewhat from that of a conventional traditional classroom teacher. It is frequently

asserted that the use of tutors is a key factor in achieving high student satisfaction and low drop-out rates. At the pedagogic design phase course designers must define the roles that will be undertaken by those responsible for provision of on-line support. In a mature e-learning institution these roles will be well defined and course designers will have a number of options, suited to differing levels and subject domains, available to them. A number of communication routes may be used to ensure appropriate mechanisms for the provision of support and feedback to students and there will be recognised mechanisms to initiate contact between mentor and student.

Communication routes may be both synchronous and asynchronous.

Indicators

Access to tutors is designed to be 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.
Tutors are able to use a variety of means (e-mail, telephone, forums 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 whenever required to discuss progress.

At excellence level:

Tutor-learner and learner- learner interaction is integral to the pedagogic design.
Where a VLE is deployed this fully supports the range of interactions needed, including individual and group interactions, disclosed and undisclosed.

4.1.4 Self-Study Materials

The use of learning materials designed for independent student study offers learners significant flexibility in time and place of study.
Self-study materials may provide part of the main course material 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.
Self-study materials may be designed to serve the needs of several courses or programmes thus each package should 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 predicted expansion of the availability of readily accessible repositories of learning objects may enable institutions to augment their own inventory of self study materials and provide their students with a wider range of self study materials than current practice allows.
Course designers should establish the extent to which they will exploit the availability of self study materials.

Indicators

The availability, function and purpose of self-study materials is clearly defined and communicated to students.
Self-paced materials incorporate extensive embedded testing of learning objectives.
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.
Self assessment elements provide remedial teaching in response to student performance.
The institution has a policy for use of self learning materials from a number of quality assured sources.

4.2 Course design

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.
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 provide a clear documented course specification which sets out the relationship between learning outcomes and their assessment.
Though aspects of detailed development and implementation of the e- learning course might be subcontracted to an outside agency (*e.g.* a consortium partner, a commercial e-learning developer) the delegation of such tasks should be conducted under full oversight of the parent institution.
Where the design of the e-learning course has been contracted out, the responsibility for its performance remains with the awarding institution. Under these circumstances, arrangements for its evaluation, modification and enhancement are important aspects of the programme plan.

4.2.1 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 objectives 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.
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.

4.2.2 Conceptual phase

During this phase, course designers will define:

- the coverage of the course
- the key pedagogic techniques that will be used
- the likely methods required for assessment

and, regarding the human and other resources needed:

- the subject expertise required
- the professional skills required

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

At excellence level:

Course design, development and evaluation is conducted by teams bringing expertise in subject domain, media use, instructional design, technical expertise, and evaluation. Integral to the course design process are mechanisms for trialling materials and incorporating feedback into the final product.
The importance of appropriate interaction (synchronous or asynchronous) between learners and with tutors is reflected in the design of the course.

4.2.3 Analysis

This phase of course design further develops the course specification, typically through undertaking a detailed analysis of learner and institutional contexts addressing key issues of e-learning such as access to ICT and networks. The outcome of this phase is a detailed specification of the course, its learning outcomes, skills development, detailed content, modes of delivery, assessment rationale, and the support that forms the framework for the remainder of the development 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. The authoring specification will indicate the outcomes expected. Academic authors and media professionals are commissioned to develop course materials within the course specification framework. Assessment instruments may be used to ascertain the specific learning styles of students, which then determine the type of course delivery.

Indicators

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 ICT within the course.

At excellence level:

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 ICT within an institutional framework.

4.2.4 Content Criteria

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, on-line 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
- be interactive

Course designers will match their use of the media and delivery modes available to them to the course outcomes identified in the analytical phase.Course designers will develop content that allows for pedagogic and subject updating.

Indicators

The specification of course content demonstrates appropriate matching of e- learning media with pedagogic 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.

4.3 Materials and production design

The processes employed in the design and production of course materials may 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 that may be applied either from initial course design or, if there is a formal separation between the two, throughout the materials production phase.
It is presupposed that 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.

4.3.1 Technical design

The Institution should provide a framework of technical, accessibility and presentational standards that apply to e-learning materials and systems embracing the following factors:

Ergonomics: Interfaces used in the technical design of courses should conform with up to date standards of ergonomic design and navigation through e-material.
Attractiveness: Interfaces and design of material, including e-material, should conform to broadly acceptable standards and be neutral as to sex, ethnicity, age and related issues.
Modernity: Software used in the courses should conform to recent standards of version and use, and be platform neutral or offer a choice in use.
Downloads: Material to be downloaded should take into account reasonable standards of time to download, pace of download, and platforms of compression (if used).
Updating: Software used should be such that updates are easily implemented and readily accessible to users.
Consistency: Consistent style sheets and schemas should provide consistency of use for learners. Authors should be provided with consistent authoring tools and a supportive environment to enable them to make effective use of tools.

Indicators

The course materials and other on-line services are designed to operate effectively on a clearly specified equipment and connectivity platform.
The technical aspects take appropriate account of the locations and circumstances in which students may access the learning materials.

At excellence level:

The institution provides course authors and course teams with extensive support on the technical aspects of course design.
The institution has one or more groups of staff committed to the ongoing development and implementation of policies relating to use of software and other tools for course design.
The institution has implemented a clear strategy for the technical requirements for student access to e- learning.

4.3.2 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. From a student perspective the interface should be fully supported by all involved in course design and delivery, and incorporate common features across all the institution's programmes. Important features are:

- That the interface is consistent. Elements such as font, text, placement and presentation should be consistent.
- Feedback cues should be available, *e.g.* the link changes colour when clicked *etc.*

- Movement between levels and between services and functions should be intuitive and consistent.
- The interface should comply with usability requirements.
- It should allow outputs in different formats.

Indicators

Students' engagement with the course materials is assisted by use of a consistent interface providing access to course components. The function of course components is identified by consistent use of styles, formats, buttons *etc*. All interfaces comply with applicable usability standards.

At excellence level:

The institution provides course authors and course teams with a range of standard interface tools that can be customised to course-specific needs. The institution offers course teams a choice of styles, formats *etc* that allow selection appropriate to course needs whilst providing operational efficiency and institutional identity.

4.3.3 Content Criteria

The development of high quality e-learning content is dependent on close collaboration and good communication between academic course designers and those responsible for its realisation as teaching media. Engagement between academics and media professionals in the technical design contributes significantly to the effectiveness of course materials. One key issue that impinges on working relationships is whether technical design inputs should be integrated with the academic and pedagogic design process or whether they should be applied to the outputs from this process.
Management of the interface between academic and media/technical experts is a key issue in circumstances where technical realisation of the teaching materials is subcontracted to a separate organisation.
At all times it remains the responsibility of academic leaders to rule on matters of pedagogy and content. Academics should be literate in the use of e-media and fully aware of technical opportunities and constraints. The materials content should:

- conform to usability standards and guidelines
- conform to metadata standards
- be relevant, accurate, appropriate and clear
- be designed for regular updating
- be reviewed periodically to ensure it continues to meet program standards
- be appropriately interactive

- accord to legal requirements *e.g.* copyright issues be identified and documented

Indicators

The course materials are judged to be fit for purpose by students and external assessors.
The course content provides a range of learning experiences for students and is adequately interactive.

At excellence level:

The course materials are acknowledged to be of high standard by students, academic peers and media professionals.
The course content offers diversity in the learning experiences provided and enables students to fulfil learning outcomes in a stimulating environment.The course content can be used flexibly in contexts other than its initial application.

4.3.4 Process management

The processes for producing course material should be well managed and allow for effective collaboration between the professional groups involved. It is anticipated that institutions will adopt and implement project management processes appropriate to their circumstances and that materials development projects will 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 of the actors in them.
- 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.
- Contractual templates for development activities sub-contracted to external agencies in compliance with industry best practice.
- Clearly defined relationships between contributors to consortium arrangements.
- Costing methodologies reflecting the direct and indirect costs of media selection on the lifetime costs of the course.

Indicators

The production of the course is progressed using an identifiable project management methodology. The roles of individuals within the project team is 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 all involved with course production access to 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.

4.4 Assessment and Evaluation

Design of the student assessment and evaluation components of an e-learning course is an integral part of the design process and needs to be considered in both the curriculum design and course design phases (see also section 2.5).

4.4.1 Student assessment

Course designers should plan the process of student assessment as an integral component of a course addressing issues relating to scope and method of delivery. 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.
Students should be fully informed on the nature and function of assessments, their contribution to summative assessment and their relationship to intended learning outcomes.
In circumstances where marking responsibilities are devolved to tutors, or in consortium arrangements appropriate measures need to be in place to ensure that the criteria for allocation of marks for each individual piece of assessment are uniformally understood and consistently applied.
E-learning offers many opportunities for multiple embedded formative assessment and learning reinforcement loops. Course designers should exploit the interactivity of e-learning delivery to embed opportunities for self assessment.
Feedback on assessments, whether provided electronically or through human intervention is an essential teaching tool. Tutors should be required to grade and return all assignments within a certain time period and provide qualitative feedback to enable improvement.

Indicators

Student assessment is an integral component of course design providing both formative and summative elements.

The course provides timely opportunities for students to verify their progress towards achieving learning objectives through both informal and formal means.

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 student on-line assessment are provided.

There is a demonstrable institutional commitment to improving assessment of courses delivered by e-learning through monitoring against appropriate performance measures and utilising feedback from students and tutors.

4.4.2 The examination process

Most e-learning courses will require one or more written examinations as a component of the summative assessment. Student performance standards on e-learning courses must be demonstrably equivalent to those on similar non-e courses.

In designing written examinations, however, staff should take into account the students' primary mode of learning. Examination processes should be part of the learning design process, optimised for the particular course concerned, and there should be briefing to introduce examiners (including external examiners) to the e-learning methods deployed in the course.

The use of e-learning raises issues on verification of student identity, and appropriate measures need to be in place to ensure an absence of impersonation or plagiarism. Cross-referencing and correlation analysis between performance on written examinations and continuous assessment may be undertaken. Examination processes should verify attainment of learning objectives by a person who is identifiable as the person registered for the course. Examinations may need to be held at approved centres where identities can be checked.

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.

At excellence level:

The institution operates examination policies that have been specifically designed/adapted to cater for the needs of e-learning courses and their teaching methodologies.
Development of fully on-line examination processes is a key objective for the institution.

4.4.3 Course evaluation and approval

Institutions developing e-learning programmes make significant investment in the research, development and production of courses hence it is essential that they have in place appropriate structures for the approval and long term evaluation of courses. The development of learning materials and their subsequent improvement demands a greater formal commitment to external review, course testing and evaluation than would be the case in face to face presentation.

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 documented feedback for improvement and redevelopment.
- Whilst 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 the potential for generation of very extensive data on student performance, *etc* for quality improvement and the course design team should devise a strategy for exploiting this.

Irrespective of source of feedback course development and presentation schedules should provide appropriate allowance in time and resources for implementation of identified improvements.

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.

Indicators

Course design and materials are subject to independent review and there is evidence that the course designers respond appropriately to reviewer comments. Course materials and delivery systems are technically tested under realistic conditions. There are appropriate feedback mechanisms in place for informing 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 inform and improve design of subsequent course projects. Professional management of all courses ensures that all materials are developed and tested using industry standard procedures for quality management.