

2 Curriculum design

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

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

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

Benchmarks

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

2.1 Flexibility

E-learning offers the opportunity to provide flexibility in the time, place and pace of learning. The presentation of content can be more flexible and the didactic approach more open. When e-learning is integrated with other study modes, providers need to demonstrate that students can extract the maximum benefit from the flexibility offered.

Institutions need to have clear policies and practices for scheduling programmes and courses. These policies should take

due account of student requirements for flexibility in time and place of study. The impact of these policies and procedures on course and programme completion, skills development and the development of student communities should be considered.

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

2.1.1 Time and pace

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

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

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

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

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

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

Indicators

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

At excellence level

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

2.1.2 Place

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

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

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

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

It is envisaged that institutions will address issues of eligibility for study by virtue of place of residence at national, European Education Area and broader international presentation and will

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have adequate policies relating to rights issues, fee levels, examination arrangements *etc.*

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

Indicators

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

2.1.3 Blended learning

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

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

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

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

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

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

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

Indicators

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

At excellence level

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

2.1.4 Modularity

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

The institution should adopt a structure for programme and course sizes that is consistent with national and European norms

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and aligns with systems for credit accumulation and transfer. This should be based on student workloads (expressed in notional study time) and the conversion rate into credit points should be widely understood.

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

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

Indicators

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

At excellence level

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

2.1.5 Credit transfer

Credit transfer between programmes within an institution and more broadly between institutions and across national boundaries contributes to the flexibility offered to e-learning students.

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

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

Indicators

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

2.2 Academic community development

Participation in a scholarly community that values the exchange of knowledge and ideas is an essential component of higher education. Institutions presenting e-learning programmes should

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therefore design their curricula to foster broad participation in online academic communities.

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

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

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

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

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

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

- Feelings of impersonality: this can lead to low participation in collaborative activities or team work, particularly if the activities are not part of course assessment.
- Behavior online: disagreements, misunderstandings and 'flaming' can occur.
- Managing students' expectations of response and support by teachers: students need to develop as self-regulated learners, with reduced dependence on teachers.

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

2.2.1 Student-student and student-teacher communication

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

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encourage online contact between the participants in the teaching-learning process.

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

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

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

The institution may work with student groups and associations in fostering online student groups that operate independently of programme structures. These groups may have a subject, professional or predominantly social focus. They may be supported via the institution's VLE, for example, or via an external social networking site such as Facebook or LinkedIn.

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

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

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

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

Indicators

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

At excellence level

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

2.2.2 Connectivity with non-campus professionals and professions

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

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

There are significant potential difficulties in the negotiation and management of placement arrangements for institutions intending to operate across a broad geographic territory or national boundaries.

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

Indicators

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

At excellence level

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

2.2.3 Research involvement

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

Access to library facilities now seldom presents problems for students studying remotely, and web-based research forms the backbone of many conventional research projects. Access to laboratory facilities poses greater problems but it should be recognised that many students choosing to study remotely by e-learning may be studying for professional reasons and be in a position to undertake research activity related to their full-time

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employment. Co-location is not essential for data analysis and there are many examples of major European research projects that operate with distributed teams hence there is no reason why research students must be campus based. Online students may contribute to the work of campus-based research groups, possibly participating in meetings using desktop video and audio conferencing methods.



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

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

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

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

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

Indicators

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

At excellence level

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

2.3 Knowledge and skills

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

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

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

2.3.1 Transferable skills

The development of a suite of core transferable skills that relate to literacy, numeracy, critical analysis, presentation and communication is an essential aspect of higher education programmes. These skills are highly valued by employers who may regard them as of equal if not greater importance than the subject knowledge that graduates take with them to the world of employment. Increasingly employers also value e-skills: those literacy, information literacy, communication and organisational skills that apply to conducting professional life online.

Institutions offering e-learning programmes have a responsibility to provide these skills for their students and to demonstrate their provision and effective assessment to potential employers. Students should have the opportunity to demonstrate the skills they have acquired in operating in the online domain.

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

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

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

Indicators

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

At excellence level

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

2.3.2 Professional and vocational

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

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

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

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

Indicators

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

At excellence level

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

2.4 Assessment procedures

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

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

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

2.4.1 Formative assessment

Formative assessment can take a variety of forms ranging from voluntary online self-assessment tests with built-in feedback to more formal items of assessment. Formal items may well have a summative assessment role, but also demand individualised feedback from a tutor or examiner through which a student can judge their progress and reflect on their further learning.

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

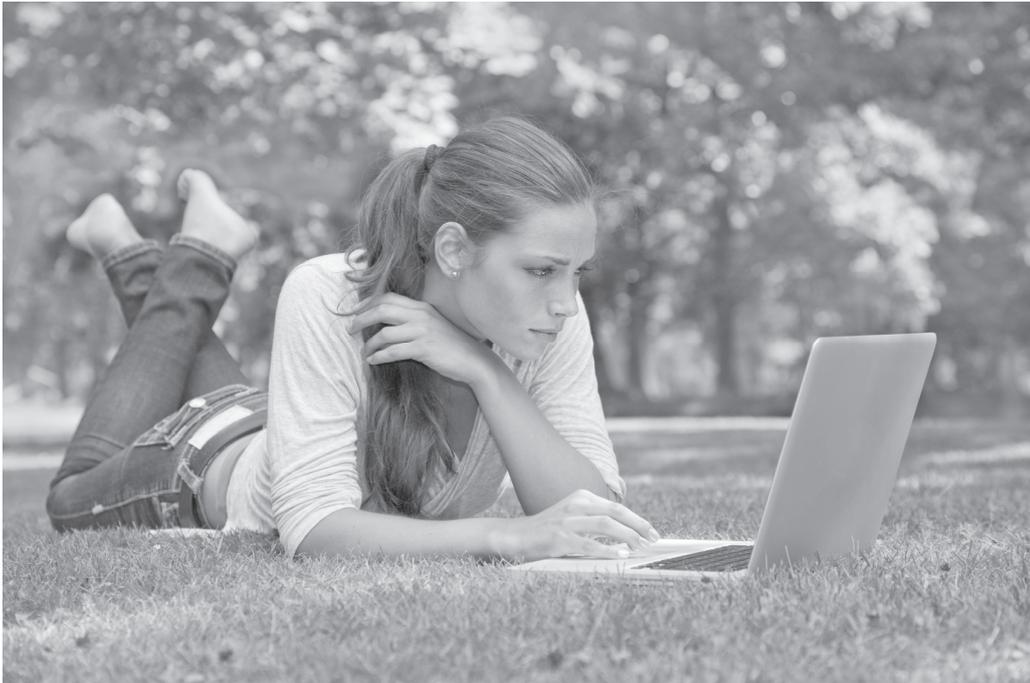
New technologies offer opportunities for formative peer assessment (peer review). Online communication tools such as forums, wikis and social networking sites can be used by students to view each other's work (perhaps in draft form) and provide constructive feedback. This feedback can be used by students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

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

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

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



2.4.2 Summative assessment

Procedures for summative assessment need to be:

- explicit (i.e. the requirements for successful completion of the assessment item and the criteria by which marks are allocated should be clear to students and examiners alike)
- fair (i.e. the nature of the assessment should not favor or disadvantage any particular student or group of students)
- valid (i.e. the assessment should be an effective test of the achievement of the particular learning or skills outcome(s) under consideration)