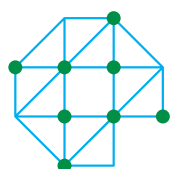


Blend your education

Designing a digital learning environment

Guide



Acceleration plan

Educational innovation
with ICT



Facilitating professional
development of lecturers

Guide for designing and configuring a digital learning environment

The digital learning environment plays a key role in blended education. In this protected environment, students can find all the learning resources and assignments they need to complete a course or module. Typically, a digital learning environment is acquired and set up for the whole institution. This means that a uniform environment is created which lecturers must then configure and tailor to their own specific teaching needs. However, how the lecturer designs their own course or module in the available digital learning environment¹ depends on the educational design and what functionalities the learning management system (LMS) offers. However, the underlying principles and building blocks are more or less the same for every LMS. This means that the insights in this guide can be used for almost any LMS.

The digital learning environment is a place where students learn, both individually and in groups. This means that when configuring this learning environment, the lecturer should consider how students will be activated to participate and engage with the learning content and with peer students. In a digital learning environment, ownership and self-regulation – and support for this – are essential, as students must engage in and take responsibility for this themselves. To develop and encourage ownership, it is necessary to make visible, in the digital learning environment, how the course is structured, what actions the student is expected to take and how feedback is provided.

Below is a step-by-step explanation of how to design and configure your digital learning environment and make it a logical component of education:

¹ It is useful to remember that there are two types of systems you can use in your teaching. First, there is usually already a learning management system (LMS) in place, such as Canvas, Blackboard, Moodle, It's Learning or Brightspace. These are comprehensive systems in which you design courses and provide a digital learning environment. Then there are separate tools that focus on facilitating one or more specific work formats. Examples include MS Teams, which focuses on collaboration and video calling, or Mentimeter, which is designed to collect answers to questions digitally.



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Elements of the LMS

Each LMS tends to have the same functionalities. It is therefore good to reflect on these common functionalities before you start zooming in on the details. These functionalities are listed in the table below.

	Purpose of component	Suitable for	Not suitable for
Notifications	Use the notifications functionality to post messages. Check in the settings whether students can and are allowed to post messages on this page, for instance via a forum.	This component is suitable for practical arrangements relating to the module, schedule changes or deadlines.	Posting content such as PowerPoint presentations and assignment descriptions.
Introduction	Initial introduction to module content and the lecturers involved. This is usually the landing page. Take the time to make this a motivational introduction that appeals to students by using videos, photos and podcasts.	Brief substantive and inspirational explanations using different media.	Large attachments such as a study guide, group breakdown, etc., or content that is subject to frequent changes.
Module information	Giving the student an overview of the module's learning content. This component is essentially the course study guide and can replace a paper version of that guide. It often consists of a set of pages with static information. See the overview below this table for a logical structure of this component.	All didactic and practical features of the module.	Interaction on content, submission of assignments.
Learning activities	Making all the learning activities in the module visible and accessible, both the synchronous and asynchronous elements. With this component, you build the content of the educational programme and guide the student through it.	All teaching materials such as PowerPoint presentations, assignments and interactions.	Private communication between lecturer and student.
Sources	Provide a clear overview of all the sources in the module.	All sources, from knowledge clip to article.	Physical learning resources in the classes; these are listed under learning activities.
Settings	Management of the digital learning environment for both lecturers and students. Here the user can adjust the settings. For example, the lecturer can activate or deactivate various elements and the student can choose the type of notifications he or she wishes to receive.	Priming institutions well in advance of providing the course or module.	Changes during provision of the module or course.

Structure of pages

The student will find all relevant information about the course or module on one or more pages. It is useful to have a fixed structure for this:

- **Introduction:** Give a brief description of the content of the course or module, its connection with other components and the expected prior knowledge.

- **Valuable information:** Refer to relevant (institution-wide) information, institutional requirements or information in the course and exam regulations.
- **Intended learning outcomes:** List your intended learning outcomes here. If possible, link these to a real-world example or another module. Make the relevance of the learning outcomes clear with images and sound.
- **Assessment:** Explain how assessments and reviews will take place. Include all conditions and planning here so that the overall picture is clear.
- **Planning:** Include a clear schedule of the course or module on the page. Make sure you always keep it up to date and announce any changes in the notifications.
- **Contact:** Introduce lecturers here along with their contact information. Including a presentation video for each lecturer is an added value. You can also include a who's who page where students can introduce themselves and add their contact details.

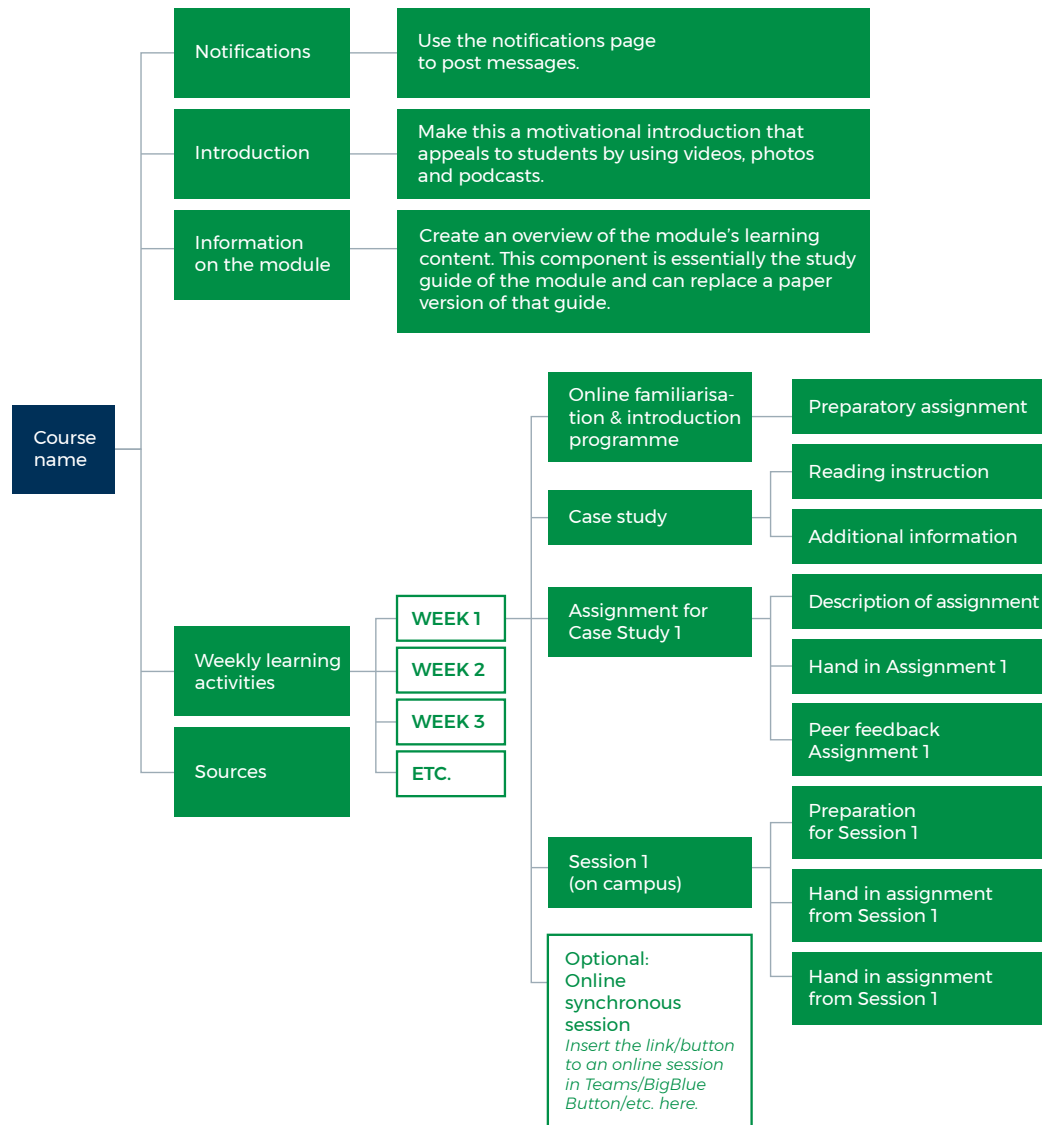


From design to configuration

Now that you are familiar with the basic functionalities of each LMS, it's time to configure it. The basis for configuring the LMS is the educational design created for the course. The design generates a list of learning activities that should have a place in the LMS, such as a knowledge clip, quiz, article, assignment submission, and so on. Each learning activity provided for in the LMS is enriched by shorter activities that guide the student's actions. Incorporating a knowledge clip, for example, requires:

- Making or finding the knowledge clip.
- Making the knowledge clip available.
- Writing and providing an instruction.
- Discussing the instruction with students.
- Posting a notification about the knowledge clip and the associated learning activity.

To structure the process from design to configuration, it is useful to make a tree structure and link actions to it which you, the lecturer, have to carry out. The tree structure is a logical extension of the educational design you have created and helps you identify all the desired components in the LMS. Below is a sample structure for one week's educational content. Obviously, you will elaborate the learning activities for each week. How many 'branches' you make depends on the design you are working with and the structure of the LMS. Most importantly, the student should be able to easily navigate through all the steps and know exactly what needs to be done and when. The tree structure also makes visible what you as lecturer have to do to complete all the learning activities, such as creating knowledge clips, working out assignment descriptions and recruiting guest speakers.



Provide structure

Structure helps students study, stay motivated and develop self-regulation ([read more here](#)). Providing sufficient structure is an important prerequisite for bonding, provides guidance and prevents unnecessary irritation among students. Ideally, the structure used to design courses in the LMS should be the same for the entire course. This is why, in some cases, a course template is used. Always check first with colleagues if a template is available. Structure is not only a prerequisite for students, but also for lecturers. A clear structure ensures much more coherence between synchronous and asynchronous learning activities. It helps to give online learning activities a proper place in the synchronous classroom and maybe even the internship. By designing the LMS to allow for the lecturer to receive notifications when students submit something or are active on a forum, these activities are not 'forgotten' but are given a place in the course and students stay motivated to continue with them.



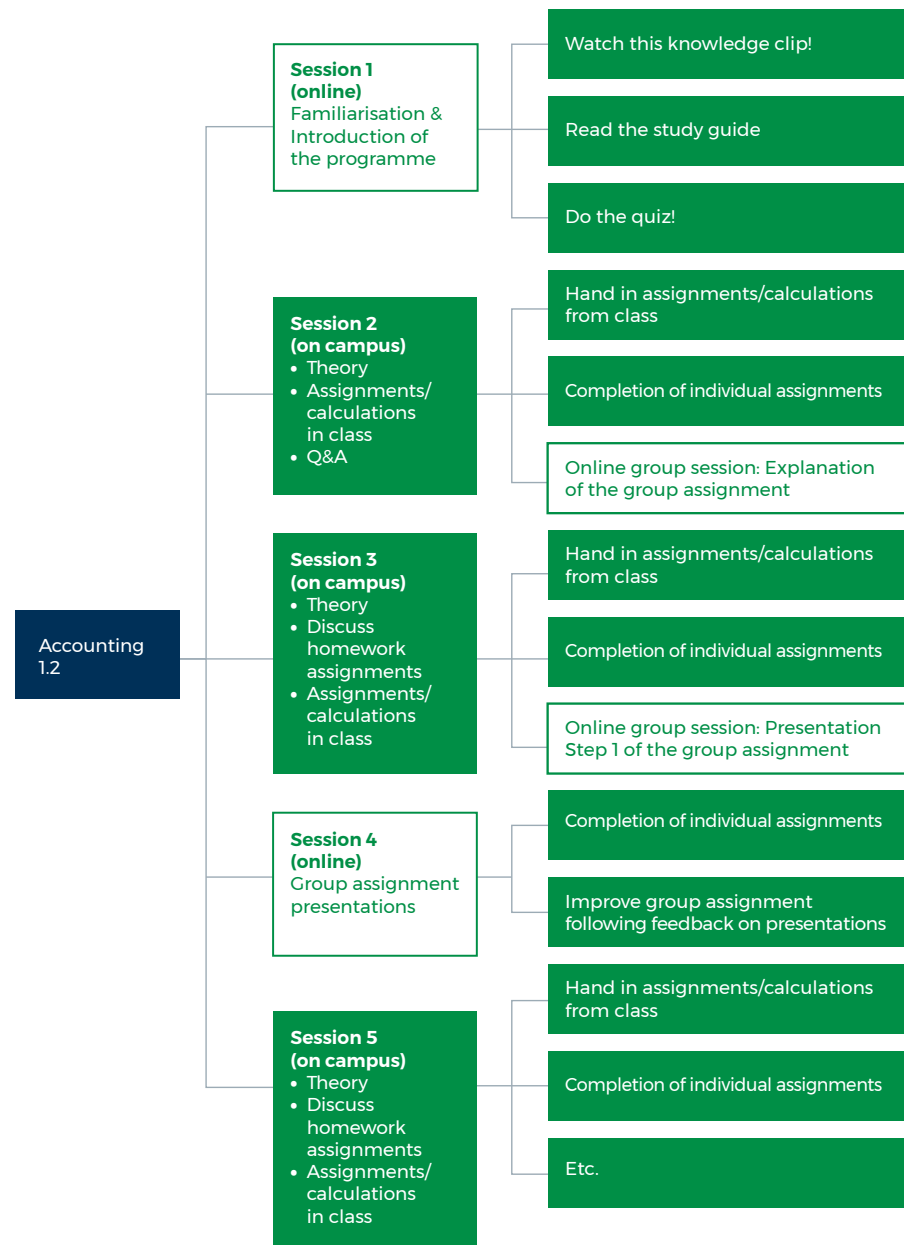
Make use of the designed learning journey

Having established the basic tree structure of the course, you can then make use of the designed learning journey in which the student will be engaged in active learning. This learning journey is converted into a roadmap, so to speak, which provides rapid insight into the steps students take in the module or course. The roadmap adds content to the tree structure and gives substance to each week's learning activities. By doing this on the basis of a fixed concept, you again create overall clarity. Three possible roadmaps are described below, building on the basic tree structure you developed earlier.

Roadmap 1: Understanding & Applying

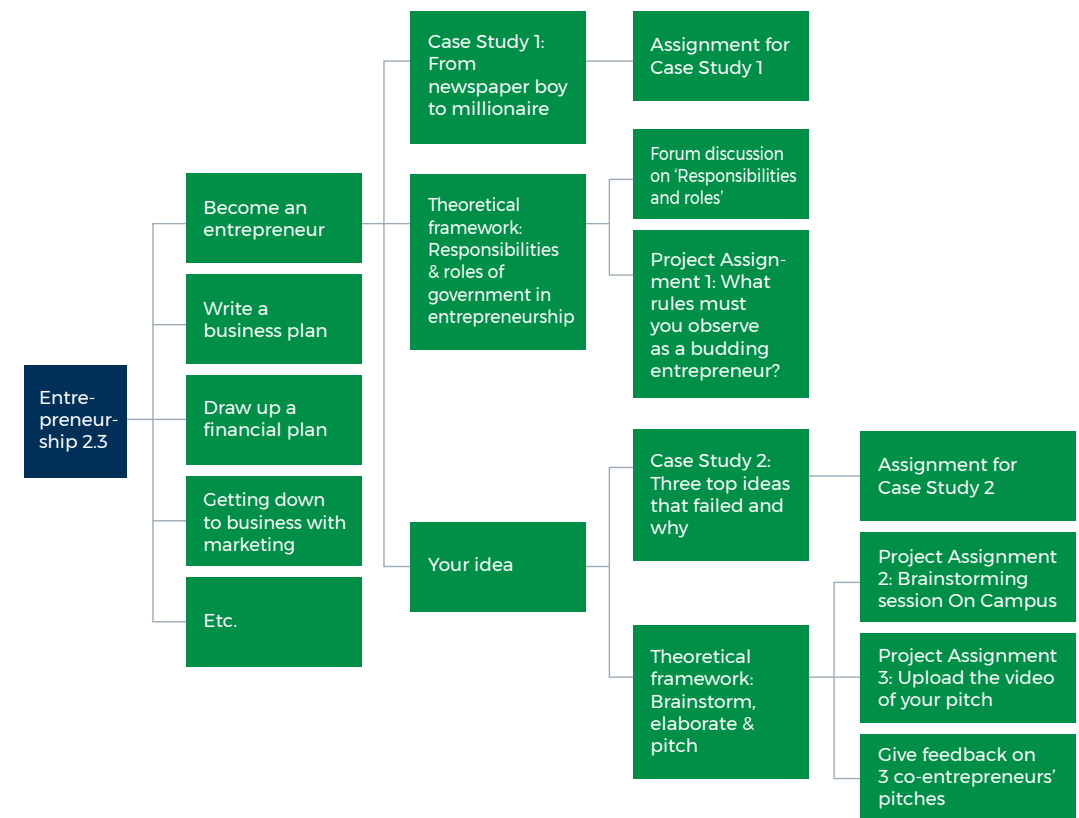
In this roadmap, you create a learning experience in which students learn from the expert (the lecturer), practise individually with the learning resources provided and collaborate in groups on a major assignment. We use the fictitious module 'Accounting 1.2' as a case study. There is little peer feedback and adaptive learning in this roadmap. However, this is easily added by publishing the answers of the individual assignments once a student has submitted their assignments. To avoid online 'cheating', you might consider not giving every student the same assignments. In the group assignment, it is possible to organise peer feedback by having the groups look at each other's presentations. You can organise peer feedback online, or orally during the session.

Figure 'Understanding & Applying' Roadmap'

**Roadmap 2: Project-based**

In this roadmap, you use a project or narrative (story) to take the student through the programme. For example, by designing learning content based on case studies. Each case study is a next step in the programme and is elaborated with different learning activities. In this roadmap, the outline for the fictitious 'Entrepreneurship 2.3' module has been developed using case studies, a theoretical framework and project assignments.

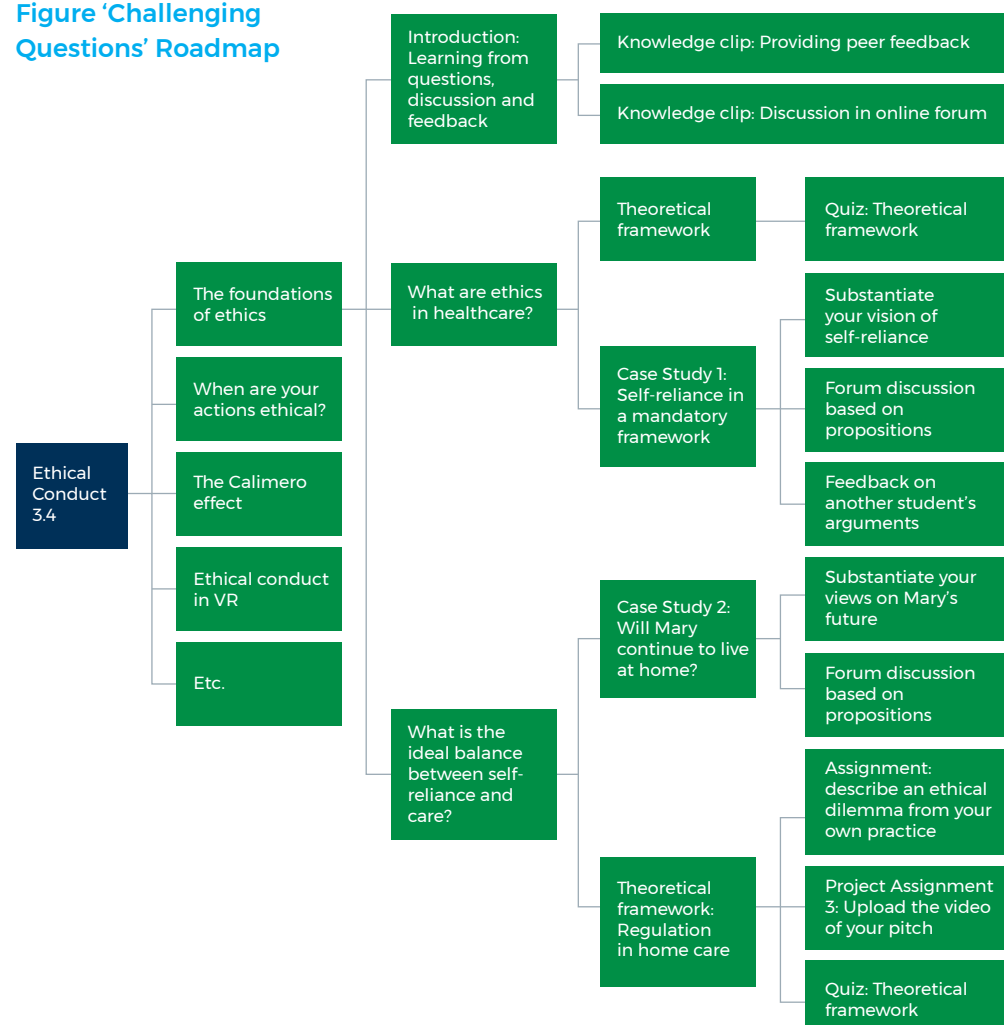
Figure 'Project-based' Roadmap'



Roadmap 3: Challenging questions²

In this structure, you translate the learning outcomes or learning goals into stimulating and challenging questions. Each question invites the student to reflect on the subject matter, study it in greater depth and expand on it with assignments and feedback. This type of structure gives a distinct place to feedback, self-reflection and in-depth learning. It could even be a format for 100% independent learning, without classroom sessions. Whether this effectively adds value depends on the aims of the course. A structure based on challenging questions could look like this:

Figure 'Challenging Questions' Roadmap



² Big questions: edusupport.rug.nl/1921187874/#Structureyourcourse-Creatingalearningroadmap

- ✓ 1 —
- 2 —
- 3 —

Work with steps

The smallest learning unit within a course or module is a course step. These are the building blocks of the course. Ideally, each step combines learning resources with interaction and forms a coherent and complete learning experience. This means that a step is much more than just providing a source, such as an online article, which is uploaded to the learning environment. Students should know why a step in the roadmap is relevant to them in relation to the course's intended learning outcomes and have a positive experience each time they successfully complete a step. This helps students stay motivated to learn.

Most lecturers will tend to add content first (with links to articles, book chapters, audio, video, lectures, etc.). But to ensure you encourage active learning, it is a good idea to supplement texts with reading, viewing or listening questions. This way, the learning content is complemented by interaction that stimulates discussions. Useful functionalities in an LMS for this purpose are collaborative annotation³ or an online discussion forum.

As it is important to make it clear to students what the logical sequence of course steps is, make sure learning resources and activities are presented in a visually logical way, e.g., underneath each other. Try to make the steps as small as possible, so not:

'Read these three articles' but rather:

- Article 1: Political system (20 minutes' reading time)
- Quiz: Political parties (10 minutes)
- Assignment: Write an essay and submit it by 10 March
- Forum: Submit your propositions (deadline 14 March)
- Nudging in education⁴

³ Collaborative annotation: *In collaborative text analysis, you and your students can analyse texts online. Students (and the lecturer) work together in the same document. Both students and lecturers can select sections of a text and directly ask a question about them or start a discussion. As a result, students read the texts better and can easily engage in discussions more deeply than when using a stand-alone discussion forum. (icto-onderwijsstools.humanities.uva.nl/collaboratie-ve-tekst-analyse)*

⁴ Nudging: *Encouraging people by setting up the environment in a way that makes it easier for them to make a choice that is in line with their own interests (Wijers, www.nudginginhetonderwijs.nl). Nudges are subtle (and sometimes not so subtle) behavioural psychological motivation techniques that influence and potentially improve students' learning strategies.*

Consider building nudging into the digital learning environment. A nudge is a gentle push in the right direction to encourage desired behaviour. Nudges encourage students to plan their education, set goals complete the course and procrastinate less. Below are a few examples:

- Work with deadlines and communicate them frequently in the digital learning environment.
- Draw students' attention to preparatory homework in notifications.
- Send personalised messages to students who are behind in their coursework.
- Set automatic reminders for outstanding assignments.
- Automatically award badges or checkmarks upon completion of learning activities.

This [toolbox](#), which has been developed by Erasmus University and partners, provides useful nudges for different steps in the course and for the digital learning environment.



Build in interaction

Starting from the course steps, you can create interaction among students and with the lecturers involved. This interaction can be online, offline, synchronous or asynchronous. Consider what you want to create interaction about in advance, where it will take place and what the learning objective is. A discussion does not start spontaneously; students must feel safe enough to contribute and understand the relevance of participating in such a discussion. You can incorporate interaction into the following assignments:

- The lecturer publishes one or more propositions in the forum. These propositions have a clear relationship with other learning activities or learning content in the course. Students respond to the propositions with agree/disagree. Later in the programme (after the lecturer and students have seen each other several times on location), this is expanded on.
- Invite students to produce their own quiz questions to accompany the learning content and share them on the discussion forum.
- Have students give each other feedback via an interactive online tool (preferably in the LMS). Make sure you design this properly, in advance, using steps and ensure a clear relationship with learning outcomes, learning resources and learning activities.
- Give students assignments that have a visual outcome, such as a picture, mindmap or infographic. Let them share these with each other in the digital learning environment. After a session, ask students to give feedback on these assignments via the LMS.
- Structure and automate the process of providing feedback online. Bear in mind, however, that students have to learn the basics of giving and receiving feedback. First-year

students in particular often do not know how to give or receive meaningful feedback. Using the LMS (and sometimes additional tools), you can support and automate many elements of the feedback process. Alternate between peer feedback, lecturer feedback and self-reflection, and organise feedback on products as well as the process.



Design & tips

Designing a digital learning environment requires a certain degree of technical dexterity and clear design choices. In addition to structure, the design of the digital learning environment also determines how easily the user navigates through it. Not all design can be modified, especially if it is subject to house style rules. However, smaller learning units such as a knowledge clip can often be designed independently. It is definitely worth putting some thought into a good background, clothing and visual support for a knowledge clip. The same goes for a podcast: the quality of the audio recording determines whether a student listens to the entire episode. Here are some tips:

- Use the [Richard Mayer principles of multimedia learning](#) to design the digital learning environment and learning resources to be developed.
- Embed external resources into the LMS. This involves displaying content that is in one place, such as a YouTube video, in another place, in this case the LMS. This looks visually appealing and lowers the barrier to using the learning resources.
- Make use of the adaptive capabilities of the learning environment by establishing conditions for unlocking the next steps. For example, a reward when an assignment is unlocked or additional information on an assignment after a certain period of time.
- Make convenient use of summaries and other overviews to engage the student in the learning process.
- Also use the digital learning environment, during sessions, by displaying it on the screen during an assignment, thus making the 'blend' more visible to students.
- Give smart feedback on online assignments. You can do this as follows:
 - Publish a rubric in advance that allows a student to assess their own work.
 - Make a list of feedback you give often so that you can use it as needed.
 - Record a knowledge clip or podcast with your feedback to the group and share it when the assignments are handed in.
- Ask IT support services to take a look with you if you can't figure it out; the solution is often easier than you think.
- Make use of templates developed for the course; this will save a lot of time.

In closing

Take the time to fully embed the digital learning environment in the learning programme. It is highly advisable to incorporate this in your design, for by having students actively engage in this from the first day of their first academic year, it becomes a logical part of their curriculum and they will learn the value of it. Without the digital learning environment, blended learning is not possible.



The Acceleration Plan for Educational Innovation with ICT is a four-year programme focused on bringing initiatives, knowledge, and experiences for digitalisation together. The programme is an initiative of SURF, the Netherlands Association of Universities of Applied Sciences, and the Association of Universities, and is organised in eight acceleration zones. In the zone Facilitating professional development for lecturers, 16 institutions are working on improving the professional development of lecturers in Dutch higher education.



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