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How to Develop Digital Course

DANTE PROJECT GUIDELINES



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1 Introduction: Guidelines and methodology

The goal is to create methodological guidelines for developing digital courses that are universal (well-structured, interactive, with feedback from students, checking knowledge etc.).

Many different activities are suitable for a particular field of study. A different concept of lessons should be created for Faculties of Medicine, Science and Technology – where demonstrations in laboratories play an irreplaceable role, or for Faculties of Economics or Social Sciences for example – where activities such as cooperation and discussion might be more important.

Economics and humanities are currently the dominating fields of study. As an example, according to student statistics for 2020, about 25% of students in the Czech Republic study in the fields of business and economics (which is similar to other EU countries). Since business and economics programs play an important role for all participating partners, the DANTE guidelines (methodology) for creating a digital course will focus on these fields of study.

The goal of the Dante guidelines was to create methodological guidelines for developing digital courses that are universal. Because of the nature of online and digital teaching these guidelines are not seen as a fixed outcome. Teaching and curriculum development is an ever-evolving practice. A novice higher education instructor might use these guidelines to make the leap from classroom teaching to digital teaching, however we expect this development to be continuous. These guidelines provide the basic concepts that are important for the creation of digital courses and how to teach digitally. They can be seen as an add on to the ever-developing teaching toolbox for instructors. They are based on research and experience of digital and eLearning experts. It is important to remember that there is no one right way to teach online. It is a continuing process of learning and innovating for the students and the teachers alike. We want the guidelines to serve and benefit both those moving from classroom teaching to creating digital courses and also those that want to further develop their digital courses.



Moving from an on-campus teaching format to an online teaching format is a significant task. It is crucial that you have institutional support for the change to be successful. Therefore, before we move onto the topic of creating successful digital courses, we'll discuss the possible barriers for institutional change towards eLearning.



2 Identification of potential risk and barriers for institutional change

There are several barriers that may restrict institutional projects that are based on eLearning. Such barriers should not be considered insurmountable, but if they are not addressed from the beginning, they will certainly jeopardize the success of the project.

These barriers will come into focus as soon as the current educational paradigm and the organization and management of the institution are questioned, because those elements are a big part of its identity. The very same structure that has always served the school community well now proves to be a hindrance to the implementation of an eLearning system (Moore, 1994) and the internal pressures blocking change will be felt during the implementation of the eLearning system. Such behaviour is understandable, since human beings create habits and set ways to solve the problematic situations that arise. Human beings don't like changes that they don't understand, or don't know to what extent those changes will bring them any advantages. Therefore, it is important that institutions have a clear strategy on how to implement eLearning within the institution.

It is important to mention that "The major problems are associated with organizational change, change of the faculty roles, and change in administrative structures. Here we desperately need all the ideas and all the leadership that can be assembled. The starting point is to expose the problems." (1994, p. 03) This emphasizes the need not to leave out the administrative structure of the institution's reorganization process, which will prove to be as important and necessary for this process as the curricular and pedagogical structures. Generally, institutions are what the human resources that work within them want them to be. They are the ones who support their functioning and "Without this support, distance education is at risk of becoming a peripheral activity, without commitment from or significance to the institution." (Marrs, quoted in Galusha, 2004, p. 08).



The administrative aspects are linked to the technological aspects, which should propose ergonomic and user-friendly solutions. The relevance of technological infrastructures in eLearning systems depends on the success of the adopted pedagogical models and the autonomy of its users, as well as the availability for technical support. This is aligned with the results of Kebrotchi, Lipschuetz and Santiago (2017) review of the available literature, which led them to the following conclusion: Institutions of higher education need to provide professional development for instructors, training for learners, and technical support for the content development and delivery of online courses, to address the challenges faced by online education and to enhance its effectiveness.

In this complex setup, that interconnects technical, pedagogical, social and functional aspects, higher education institutions have a decisive role. That can be difficult when it places the implementation of an eLearning system into its objectives. Institutions of higher education will face a wide variety of problems. According to Berge (2001) they will mostly be associated with necessary organizational change, changes in operating rules and fundamental changes in administrative structures.

The author also points out five stages of organizational maturity when implementing an eLearning system, which makes barriers either weaker or stronger, depending on which stage the institution is at. The first stage includes institutions that have never carried out activities linked to eLearning. The second includes institutions that have carried out occasional or sporadic eLearning activities. Thirdly, there are institutions that have the technical and human capacity to organize and implement eLearning activities if they are proposed and the fourth stage includes institutions that have established and planned an eLearning implementation and development strategy. Finally, the fifth stage includes institutions that have perfectly institutionalized eLearning in their daily practices.

What stage the institution is at will influence how seriously the barriers mentioned below will impact the implementation of eLearning. Reviewing some authors who refer to these barriers shows that there are very diverse ways of



classifying and grouping them into categories (Rezabeck (1999). Cegles (1998). Leggett and Persichitte (1998). Garland's (1993). Merriel et al (1992), cited in Muilenberg and Berge. 2001). However, all those authors include aspects related to the necessary organizational changes of institutions. They do so in ways that are striking and important for the full integration of eLearning to take place within the institutions.

Let us therefore adopt a set of ten factors that can be obstacles when implementing eLearning in an institution, based on the work of Muilenberg and Berge (2001).

- 1. Administrative structure**

An eLearning program must establish partnerships between different units within the same institution or between different institutions, which can create a series of barriers related to cost accounting and revenue distribution, among others.

- 2. Organizational change**

Organizations' resistance to change. If eLearning is not a vision shared by all and strategically planned, the process will become very slow and difficult.

- 3. Technical infrastructures**

We know that it is difficult to keep technical updates up to date, whether it being hardware or software; the lack of technological literacy on behalf of professors and other employees and their possible lack of skill in designing and developing materials and teaching at a distance.

- 4. Social factors**

Which relate to the quality of social interactions that the eLearning program allows. The isolation that participants may feel is an important part of this. This isolation can stem from the lack of face-to-face contact between those involved in the training process; it can also stem from discomfort regarding student-centered activities and collaborative work, as they change the traditional classroom setting in which the teacher directs the learning of students. Good quality materials and courses will take into account the absence of a common physical space shared by teacher and students. It will also pay special attention to the evaluation of student results. The most important factor of online and distance learning is communication, both between teachers and students and between the students themselves. The quality of the communication should be the priority, not the quantity.



5. Time and compensation

They are important for the success of an eLearning system, since the time spent by the institution on preparing materials and experimenting with technology and techniques is significant, often jeopardizing the profitability of the eLearning system itself. It is urgent to support this type of project.

6. The threat of technology

Which is seen by some teachers as a factor in the possible reduction in the number of teachers, so the adoption of new technology can be seen as a threat. If a teacher is intimidated by technology, he can compromise his authority as a professional who leads a group of learners, so any of these psychological factors can lead the teacher to feel that his safety at work is threatened.

7. Legality and security

Attention is drawn to issues of legality, copyright, piracy, property rights, plagiarism and other problems linked to the increasing use of the Internet in distance learning.

8. Evaluation/Efficacy

It is the factor that stands out as special because it requires great rigor and effectiveness on behalf of the distance evaluation systems. Much remains to be researched further in this matter, since only an effective and credible assessment system can prove much of the effectiveness of distance learning.

9. Info-exclusion

There are still some (teachers and students) who do not have easy access to the means of communication through the internet, or to the necessary hardware or software that make it possible to follow a distance course. Therefore, issues related to universal access to technological means must be resolved when implementing an eLearning system.

10. Factors linked to student support services

Some services may be more difficult to provide at distance, such as: student counselling, access to library services for research, consultation and requesting books, the social and financial support of the student, as well as the certification of the student's identity; that is, proof that the student enrolled is indeed the same one who takes the tests and finishes assignments etc.

The factors that link time and compensation are, according to Muilenberg and Berge (2001), extremely important for the success of the eLearning system, since the institutions spends considerable time on preparing the materials, on experimenting with technology and different techniques, which often jeopardizes



the profitability of the system itself, making it necessary to support this type of project, which according to the authors is not always the case.

All these factors are important and, according to Muilenberg and Berge (2001), help to reduce or consolidate the barriers and obstacles towards the implementation of eLearning systems within institutions. It is important to place the institution in one of the five stages of organizational maturity, when starting the process of implementing an eLearning system.

Even though 21 years have passed since Muilenberg and Berge (2001) published their findings, it is still relevant for institutions considering implementing eLearning. But in addition to the beforementioned factors, the eleventh factor should be added:

Support for faculty: For an institutional change to take place, resources such as training, mentorship and assistance must be available. This is especially important when it comes to educational technology. It is important that stakeholders realize that higher education institutions do play a central role in enhancing the quality of online education by providing support for instructors and learners, as well as content development.

3 Creating a digital course

The general rule is that when instructors are creating and preparing their course, either face-to-face or online, they should always start with writing learning outcomes, then decide what teaching methods to use, to fulfil the learning outcomes and then choose what technology to use. It is important that technology does not determine how the course is set up, the pedagogic aspect should determine that (Rennie & Morrison, 2012).

3.1 Learning outcomes

Good learning outcomes are vital. They should be measurable, and the assessment should be aligned with the learning outcomes. Learning outcomes describe what a student is expected to know, understand and be able to do, after he completes the course. We must come back to the core concepts in your courses, students need practice in applying and using the core concepts. When instructors are designing courses and creating learning outcomes, they must think about and identify core concepts, questions, and performance goals for the course.

a) Course description

Needs to have an accurate overview that includes learning outcomes for the course according to the syllabus, course overview and the number of hours the students can expect to need for the course, according to the course credits. Also, information about the teacher/teachers and modes of communication in the course.

b) Syllabus

Just like in face-to-face courses, a clear and concise syllabus is important in online courses. The syllabus should include the course outline, an explanation of how the online course is organized and how it will function. A good syllabus includes course requirements, learning outcomes, evaluation process, contact information, schedule, and institutional policy, such as policy on plagiarism. In an online course a good syllabus should include these



objects, plus some additional items specific to online courses. Those items include communication strategies, a precise description of the course time frame and format, guidelines for online class participation; technical requirements and support and finally a comprehensive course outline, including start and end dates for each lesson.

c) Assessment

A variety of assessments can be used in online courses, just like in face-to-face courses. It's important that the assessment is aligned with the learning outcomes set forth.

d) Student workload

It is important that the workload is aligned with the ECTS credits for the course. Workload includes the time students typically need to complete all the required learning activities to achieve the expected learning outcomes set forth in the course description (European Commission, Directorate-General for Education, Youth, Sport and Culture, (2017). We suggest the use of templates that have been created to calculate the workload. Our recommendation for a template to use comes from the [University Centre of Svalbard](#) and it also includes an Excel file that can be used to calculate the workload based on ECTS credits.

3.2 Teaching methods

Before deciding on what teaching methods to use, it is important to decide on what format to use; online, hybrid or blended.

1. What format is going to be used?

Table 1. below shows a prototypical course classification for different types of formats to use, from traditional to fully online.



Proportion of content delivered online	Type of course	Typical description
0%	Traditional	Course where no online technology used – content is delivered in writing or orally.
1 to 29%	Web Facilitated	Course that uses web-based technology to facilitate what is essentially a face-to-face course. May use a learning management system (LMS) or web pages to post syllabus and assignments.
30 to 79%	Blended/Hybrid	Course blends online and face-to-face delivery. Substantial portion of the content is delivered online, typically uses online discussions and has reduced portion of face-to-face meeting.
80%+	Online	Course where most or all of the content is delivered online. Typically has no face-to-face meetings.

Table 1. Prototypical course classification (Allen & Seaman, 2010)



2. Synchronous -asynchronous?

In both online and distance education, learning can take place at the same time but in a different place, and this is called synchronous distance learning. This occurs when students meet at the same time but in different locations, either online or through satellite, television, or other available technology. In asynchronous distance learning, students learn at different times in different places.

3. Teaching methods related to assessment

The number of students and what course formats are used determines which teaching methods are the most logical choice. Below is a table that can be used to guide which teaching methods and assessments are used.

3.3 Evaluation and assessment methods

The fully online models eliminate all in-class meetings and move all learning experiences to online spaces, using the Internet to provide content and to facilitate interaction between students and teachers. Because of limited face-to-face contact, teachers should ensure that students are willing to attend an online class. Teachers should expect to spend 2-3 times more time in planning online teaching activities than they would for a face-to-face class.

The assessment process is a way of collecting evidence and judging whether competency according to learning outcomes has been achieved. During this process the teacher either decides alone or with the students what the evaluation criteria should be. The criteria should be well targeted and aligned with learning outcomes set forth in the syllabus, it should reflect the objectives of the course, be clearly measurable, and not be excessive in volume. Examples of evaluation and assessment used in an online course include:

Summative assessment according to content and methodology could for example be a written exam, an oral exam, an oral discussion project or an evaluation portfolio.



Formative evaluation according to content and methodology is a good practice to help students do the auto evaluation or peer-to-peer evaluation, create a learning portfolio, and conduct problem-solving activities in learning, for example by using gaming methodology.

To design and deliver a course, new techniques and facilitating learning activities may be used, which may be different from what those students are used to. These two factors may temporarily cause lower end-of-semester course evaluations. A blended course design should include a plan to collect data on the positive outcomes that are being facilitated through the new design, which can be used alongside the traditional course evaluation process.

Here are some aspects to consider when identifying focus areas, choosing types of evidence, and developing the evaluation plan. In these circumstances the following points are important:

- Talk with your department about plans for creating a blended course. Ask what evidence is expected to determine the performance of the course.
- As with all new courses it is important to review the course's outcomes, unit objectives, and student assessments. Keep in mind the kind of data that can be collected to show the process and the progress of the course students' engagement.

One of the most common indirect course assessment methods is the course evaluation survey. The purpose and importance of the course evaluation should be clarified with students, highlighting that it is essential for improving courses. Student feedback on their learning progress is important to teachers. It is important to create questions that are clear and focused on the objective and guide students to give the specific type of feedback related to the objectives.

By making students answer these questions, better feedback for more specific questions can be established. Asking about a specific type of activity or asking students to share the most important point they learned during the semester may provide useful feedback.

Yes/no questions can often be leading questions. Instead of asking "Did you learn a great amount from this course?", a better question would be "To what extent do you feel you mastered the content in this course?" and give them a scale answer.



Asking open-ended questions can help to gain feedback that would not otherwise be received. For instance, the peer-to-peer methodology can help students provide more effective feedback to open-ended questions.

To gather useful information for improving courses, course evaluations should provide an opportunity for students to reflect and provide feedback on their own learning. The teacher must consider the following factors: a) the time for students (10-15 minutes) to complete the digital evaluation during class and b) to encourage students to complete the evaluation by discussing its purpose and importance in the weeks leading up to it. If students know that the teacher will read their feedback and seriously consider changes based on it, they will be more likely to complete the evaluation.

The central assessment benefit in hybrid and distance learning is finding out exactly what students know and what skills they've developed, so that we can get a clear description of students' knowledge and skills. Try to identify what skills are most critical at this moment. What skills do students struggle most to develop? Asking students to apply higher order thinking skills, like analyzing, evaluating, or creating, allows for more student engagement and more authentic assessment.

In our classroom, assessments of learners must include analyzing and creating media products using principles of persuasion, practicing self-evaluation of literacy skills and goal setting through metacognition, as well as creating digital stories using available technology. Quizzes like Google Forms can be used to create formative and summative assessments. The quiz feature allows teachers to control how the questions are presented and a lock down browser can be used once an assessment begins, so that students cannot open or connect to any other windows.

Online discussions or reflections are also interesting and can give valuable information. The use of discussion forums or tools like Google Docs offer the possibility to observe the progress of, and comment on, student written assessments in either real time or asynchronously. Past versions of documents can be explored to review who contributed to it, by using the history feature.



Moving course to online format is a time-consuming process. Teachers must consider what teaching methods, technology activities and assessments to use. Below are two summary tables, the first one lists various teaching methods and assessment ideas, differentiated by the number of students. The second one lists ideas of activities to use in digital courses.

**Table 2.** Various teaching methods, assessment ideas by number of students

Methods differentiated by number of students.				
Number of students	Teaching method	Technology	Ideas for activity	Assessment
1-50 students	Blended, online/on site. Flipped classroom. Asynchronous and synchronous	LMS + features within in the LMS, Zoom, Pre-recorded lectures. E-mail.	Online or on-site discussion groups. Go over the subject, get students to engage on the topic. Use group work to “force” students’ participation.	Essay or an assignment on the subject. Individual final exam, either on site or online.
51-150 students	Lectures online. Discussion groups online and/or onsite. Asynchronous and synchronous	LMS + features within in the LMS, Zoom, Pre-recorded lectures. E-mail.	Online discussion groups. Offer students multiple dates and times to sign up for the discussion. Use breakout rooms (e.g., Zoom and MS Teams) to engage students in discussing the subject.	Group work, with in-group peer review. Multiple choice tests after each unit/week of the course. Individual final exam, either on site or online.
151+ students	Lectures online. Discussion groups online asynchronous	LMS, Zoom, Pre-recorded lectures. E-mail.	Online discussion groups. Offer students multiple dates and times to sign up for the discussion. Use breakout rooms (e.g., Zoom and MS Teams) to engage students in discussing the subject.	Group work (assignment), with in-group peer review. Multiple choice tests after each unit/week of the course.



Table 3. Ideas of activities to use in online/blended learning.

Activity	Description	Fully online application	Blended application	Practical information
Learning journal	Students write in their journal each week or each month for example and go over what they have been learning that week and send it to their teacher. This teaches the student to reflect on his own work and makes him follow the course work through the semester.	The journal is sent to the teacher and the teacher goes over it, comments and sends it back. Alternatively, the journal could be on a cloud-based document where the teacher has access.	The application would be the same as in fully online course, however during on-campus sessions the teacher would meet with the student and go over bullet points from the students learning journal that needs to be addressed.	Each teacher should not have more than 20 students when applying for this activity. Also, when using cloud services for sharing, make sure that all students use the same service, google docs for example.
Small quizzes	After each lecture or after a set of lectures students must complete a small multiple answer quiz.	If the LMS supports requirements to move on to the next lecture/lecture batch, set it so that the students must acquire a certain grade to advance.	Using the same application as in fully online classes, a good idea is to use on-campus sessions to do a harder quiz and then after all you have completed, go over the right answers together and create a discussion.	If the quizzes are set up so that the LMS does the grading, there is no number of students too high. Just make sure to make it so that the LMS shuffles questions and answers between students.



<p>Discussion session and a small project that follows</p>	<p>On prefixed dates in the academic year, a discussion session is held. There students discuss the topic at hand and work on a small project from the discussion session.</p>	<p>Discussion session is held in Zoom, using breakout rooms for the discussion groups. Alternatively, if the size of the group is not over 50 students, the teacher can have 10 minutes of input in the beginning, send the students in to the rooms for the discussion and have them present their findings to each other when they get back into the main room.</p>	<p>With blended courses the opportunity for an in-person discussion is always a good one. If the course is fully blended, with distance students not showing up for campus, students on campus could have their discussion session on campus and for distance students, the fully online application would apply.</p>	<p>It is good practice to have a peer review after discussion session to make sure everyone participates in the activity. However, if the group is big, this is an extra workload on the teacher. So be mindful of that.</p>
<p>Group project.</p>	<p>At the end of the semester, students' hand in a group project. The project can be anything related to the course material.</p>	<p>Organize it so that the first briefing of the project is held with all the students in the class. Put students into groups and get them going. It is often good to meet each group at least once in the beginning to help them get started.</p>	<p>Organize it so that the on-campus meeting is early in the semester. Get the students into groups early on the session and get them brainstorming their ideas and starting their work. Throughout the school year, meet with the groups to guide them on the project. Alternatively, give them an option, for example three demo hand ins of the project.</p>	<p>Using group projects is a good choice for larger classes. It trains the students in working together, it eases the workload of the teacher and often creates a good learning experience. You need to structure the assignment so that they are truly working together. Using peer review to grade their participation in the project, after the final hand in, is a strong tool to keep everybody engaged. To make it really work, make sure that the peer review grade is a big part of their final grade for their project.</p>

4 Technology used

Technology plays a key role in online teaching. Even though it should not dictate the direction we take our online teaching into, it does have an enormous effect on how we go about our online teaching. It is important for online instructors to be well acquainted with the educational technology tools available.

A successful online course is not possible if there is not some basic knowledge of the learning management system (LMS) in use, and the features in the LMS are just as good as the content and pedagogical approaches that are being applied (Vai & Sosulski, 2015). When it comes to the LMS it is important that the person working on it is very skilled and familiar with the LMS. The LMSs are systems that include collections of integrated tools that support most types of teaching and learning experiences. Usually, institutions have an LMS set in place, so it is not common that instructors get to pick their LMS of choice

Starting to use a new LMS might feel overwhelming, especially if it is your first experience of using LMS. Boettcher & Conrad (2016) provide the chapter Basic Skills and Tools: Twelve Action Skills to Know in their book. Instructors can use this list when they go to workshops, meet with experts or when exploring the LMS themselves. These are the actions you should master (Boettcher & Conrad, 2016, p:68):

4. Request or arrange for a course site.
5. Access the course site.
6. Know who to contact for help for using the LMS.
7. Upload documents.
8. Create, edit, arrange, and delete folders.
9. Upload images.
10. Use the announcement tool.
11. Set up and create discussion forums.
12. Set up assignments and major milestones.
13. Know how to access and manage course resources.
14. Set up teams and groups.

These 12 basic actions can be seen as necessary survival skills for instructors teaching for the first time using a LMS.



Boettcher & Conrad (2016) go further when discussing LMS. They provide a list of “Basic Communication and Media Tools in the LMS.” This is a list of the principal communication features of teaching and learning in the LMSs. These communication features support teaching, social and cognitive presence, and ways to communicate to and with students and provide them with access to course content and resources related to the course. The Basic Communication and Media Tools in the LMS are the following (Boettcher & Conrad, 2016.p:67-68).



4.1 Learning Management system: test your knowledge

Before reading the survival list of elements of an LMS, test your knowledge of the elements on the list.

Do you know these elements?	
Element	Y/N
Announcement	
Course Menu and Navigation	
Content area	
Discussion forums	
Gradebook	
Tests and quizzes	
E-mail communication	
Collaboration tools	
Audio and video tools	

1. Announcements:

This is the tool you use to stay frequently connected with students. With this tool you post announcements to the whole class, and this will help keep students engaged and attentive to the course. Most announcement tools support text, audio, and video messages. Announcements through this tool can include short messages, insights, and surprises in readings. For example, if a student finds a useful source for supplementary material related to the course, it would be ideal to make an announcement to students regarding that. The announcement tool is also ideal for emergencies and any changes in the course.

2. Course Menu and Navigation:

The course menu is often located on the left side of the homepage of your course. This is where you can find all the different resources included in the course, such as Syllabus Content Area, Discussion forum, Assignments, Gradebook etc.



Many institutions have a course template in place, created or modified by the institution. These templates provide consistency for students and faculty. The syllabus has its place and other course elements as well, like discussion forums, units' resources, rubrics, gradebooks, assignments etc. All have their place in the template, so navigating through the course site should not be too different between courses, be it for instructors when they are setting the course up or for students entering the course.

3. Content area

This is usually a subsection of the course menu described above. This is where most of the course content is located. It might be divided into units, modules, topics, chapters, or weeks, depending on the course structure.

4. Discussion forums

This is an asynchronous discussion and sharing ideas tool. It can be used 24/7, wherever people are located. The possibilities here are endless. There might be a Q&A forum for logistical things regarding the course and there might be scheduled discussions, for example weekly discussion. Even a designated group discussion. Most LMSs have a feature where you can arrange the discussions forums based on groups, so that students will only see their group discussion.

5. Gradebook

This, like the name implies, is where grades and points for assignments are recorded. Most LMSs offer calculations regarding the grades, for example extra credits, excluding lower grades etc. A good rule is to set up the gradebook before you start the course and make sure the calculations are correct. Supporting staff at your institution can often help you with this. When you set up assignments and due dates, many LMSs will connect it with the gradebook. It is therefore important to provide assignment names and differentiate them from one another. And that is also why it is important to set them up correctly in the beginning.

6. Tests and quizzes



Most LMSs have tools where students can take tests and quizzes, either for practice or for grades. If the latter is the case you would connect them to the gradebook. You can create the questions yourself or import the quizzes and/or tests that many textbooks provide directly into the LMS. Tests and quizzes can be designed in many ways. Often the biggest hindrance is your idea of tests and quizzes. Multiple choice with random questions or random answers is possible, so are time sensitive tests or quizzes, multiple attempts and so on.

7. E-mail communication

Communication through e-mail is for private and/or confidential one-on-one messages between an instructor and a student. Some LMSs provide e-mail Inboxes within the LMS, which can be good if you are teaching different courses, to be able to organize student's e-mails. Just make sure to check the inbox in the LMS, there is also the option forward mail to your regular inbox or to get an announcement when you receive e-mails.

8. Collaboration tools

This varies between LMSs, but some of them offer space or tools where students can work in groups, both asynchronously and/or synchronously. They can brainstorm together, work on projects, share documents or work on them collaboratively in separate locations. Student groups can meet with the instructors using these tools, they can present material to other students etc.

9. Audio and Video tools

These are tools that support recording, mixing, and editing both audio and video. Again, this varies by LMSs. Some of the available tools are sophisticated and include screen-capture programs. Some support mobile devices. It also varies between LMSs and institutions if students have access to these tools, cause many of them can be used for collaborative assignments.

You should be able to attend workshops regarding LMSs offered at your institution; some even offer online workshops.



4.2 Creating a course using the LMS

No matter the LMS, the first thing to decide is the structure of your course. Is it supposed to be a repository or an elaborate maze of all the gadgets and toys available?

This guide works for the basic online courses and should only be seen as an example of one way to do an online course.

1. After creating your course by doing your learning outcomes, syllabus and so on, start by working on your landing page. The page that all your students see when they first enter the course. On that page you should include the name of your course, an introductory video about yourself, links to your content, discussions, and assignments.
2. Decide how you want to present your course, as in how you want to give your lectures to your students. Here below you can see some examples:
 - Upload weekly lectures.
 - Upload monthly batches of lectures.
 - Give access to all your lectures at the beginning of the course.
 - Give restricted access to all your lectures. This is helpful to force students to maintain focus on their studies.
 - Students must finish some lectures before a set date, in order for the next batch of lectures to open.
 - Students must finish a small multiple-choice quiz after a certain number of lectures, to move on to the next set of lectures.
 - Students must view the lecture, so that the next lecture opens.
3. Start organizing your course in a way that suits your choices in part 2.
4. Create your assignments and link them to your landing page. Set the dates and parameters needed to fit your syllabus and how you present them.
5. Create a discussion thread and link to it on your landing page.

Types of discussion threads:

 - Coffee talk. A place where students can post discussions and talk about anything they please.
 - Assignment threads. Where students must participate in a discussion about the subject.
 - Information thread. Where students can ask the teacher about the course and a place where the teacher can post all the questions the teacher gets from students, with answers to those questions, so the whole class can get the answers as well.
6. Select dates for online conferences, if any, and create the links for them. If your LMS has a built-in calendar, make sure you post it there too. Otherwise, if the calendar is not available, keep those dates and links somewhere your students will see them.
7. Review your course, get a peer-review from your colleague, and then publish it.

5 12 steps of online teaching

It can be frightening to start the journey to online/blended teaching. Even though this manual covers challenges for institutions and how to deliver the content, there are always some things that the teacher needs to be aware of, things that might not be as important when teaching on-site. Therefore the 12 steps to successful online teaching were created by faculty and support staff at UNAK. These steps should help the teacher to create the right mindset for online/blended teaching.

1. Make an awkwardly (for you) long and personal presentation about yourself (10-15 minutes). Make students do the same, albeit shorter.
2. Stay in touch with the group weekly.
 - a. Feel free to post videos, jokes and refer to popular culture as needed.
 - b. Respond to e-mails from students within 24 hours of receipt whenever possible.
3. Submit assignments on time. Always!
4. Have a plan to create a learning community; Use group work.
5. Use both synchronous and asynchronous tasks.
6. Include and encourage choice in the coursework as much as possible.
7. Aim for a continuous growth in your course.
8. Let bigger assignments that count more towards the final grade of course always be preceded by similar but smaller assignments, based on the same technology.
9. When recording lectures, do so timelessly. Reuse wisely.
10. Take advantage of shorter recordings for everyday communication with the group. Do not reuse.
11. Keep your workload tight and let the group start working with the technology right away.
12. ALWAYS open your modules and teaching material in a timely fashion, preferably at least 3 days earlier then work should begin on it.



The four keywords for successful online teaching are:

Stability

make sure students know what is expected of them, include good learning outcomes, a clear syllabus, consistency in due dates, replies and posting material on the LMS.

Communication

be in touch with your students, post announcements consistently over the semester, respond to discussions and e-mails. Keep in mind that the quality of the communication is prioritized over the quantity.

Clarity

make sure instructions and logistics regarding the course are clear, so students know what is expected of them.

Entertainment

include entertainment, make it fun. Again: quality over quantity.

As stated in the beginning, the goal of the Dante guidelines was to create methodological guidelines for developing digital courses that are universal. We emphasize that teaching and curriculum development is an ever-evolving practice. The beforementioned guidelines listed can benefit and assist both those moving from classroom teaching to creating digital courses and those that want to further develop their digital courses.



6 Summary

The goal is to provide methodological guidelines for the development of universal digital courses, with an initial focus on business and economics programs. These guidelines are not fixed outcomes but rather present important concepts for creating and teaching digital courses. They assist instructors transitioning from classroom to digital teaching and support the continuous improvement of digital courses. The guidelines highlight the importance of institutional support in successfully transitioning to online teaching.

The potential risks and barriers to implementing digital learning in higher education institutions are discussed. These barriers include resistance to change, inadequate administrative structures, technological infrastructure limitations, social factors affecting interaction and communication, time and compensation issues, perceived threat to job security, legality and security concerns, evaluation and efficacy challenges, info-exclusion related to access to technology, and difficulties in providing student support services. The text emphasizes the importance of supporting faculty through training, mentorship, and assistance in implementing educational technology. It suggests that institutions assess their organizational maturity stage and develop strategies to overcome these barriers during digital learning implementation.

The creation of a digital course requires a systematic approach. It begins with writing clear and measurable learning outcomes aligned with assessments. The course description should provide an accurate overview, including learning outcomes, course credits, teacher information, and communication modes. A well-structured syllabus is crucial, highlighting the course outline, organization, requirements, schedule, and institutional policies.

Assessment methods should align with the learning outcomes, that can include written exams, oral discussions, or portfolios. Workload should be aligned with course credits, and templates can assist in calculating it. The choice of teaching methods depends on the course format, whether fully online, hybrid, or



blended. Synchronous and asynchronous learning options should be considered to accommodate different student engagement preferences.

Evaluation and assessment methods play a vital role in online courses. Teachers should allocate additional time for planning online teaching activities compared to face-to-face classes. Course evaluation surveys can provide valuable feedback. Designing assessments that require higher-order thinking skills and authentic application of knowledge is encouraged.

Various teaching methods, assessment ideas, and activities can be implemented based on the number of students and course format. Online discussions, group work, quizzes, projects, and on-campus sessions in hybrid and blended courses enhance student engagement and provide valuable feedback.

Technology is integral to online teaching but should not dictate instruction. Familiarity with educational technology tools, especially the learning management system (LMS), is crucial. The LMS includes integrated tools supporting various teaching and learning experiences, such as announcements, discussion forums, gradebooks, and collaboration tools. Instructors new to using LMSs can refer to a list of essential actions, such as uploading documents and creating assignments. A structured approach to course creation using an LMS includes designing a landing page, organizing content, scheduling online conferences, and seeking peer feedback before publishing.

Finally, the guidelines include 12 steps developed by faculty and supporting staff at UNAK for successful online teaching. These steps focus on creating the right mindset for online or blended teaching and include personal presentations, regular communication, meeting assignment deadlines, building a learning community, utilizing synchronous and asynchronous tasks, offering choice in coursework, pursuing continuous growth, structuring assignments, recording lectures for reuse, using technology effectively, and ensuring timely access to course materials. Four keywords for success in online teaching are highlighted: stability, communication, clarity, and entertainment. These guidelines serve as universal methodological principles for developing digital courses, benefiting educators



transitioning from traditional teaching and those seeking to enhance existing online courses.

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APPENDIX



Keywords-glossary

Elearning: *is an umbrella term that refers to the use of any digital device or media (multi-media) for teaching and learning, especially for delivery or accessing of content. Thus e-Learning can take place without any reference to a network or connectivity. The digital device used by the learner to access materials need not be connected to a digital network, either a local area network or to the Internet (or even to a cell phone network if a Tablet is used as a terminal or access device) (Commonwealth of learning. 2020:3).*

Synchronous learning: *when students meet at the same time but in different locations, either online or through satellite, television, or other available technology.*

Asynchronous learning: *students learn at different times in different places.*

Learning management system (LMS): *often also called course management system or virtual learning environment, is a web-based software system that assists teachers to manage courses and deliver lessons online. It helps in administration, tracking and reporting of the learning process. An LMS usually has the following constituent components: content creation, organisation, delivery, learner support interactions, assessment and grading, and management of the learning process (Commonwealth of learning. 2020:3).*



Analysis of Methodological Approaches: case from IPSantarém

From the total number of contact hours of the Curricular Units (CU), which are supervised working hours guided by the teacher, there are some CUs in which there is a percentage of hours intended for face-to-face sessions and another percentage intended for distance sessions. In these cases, the distance sessions, or part of them, are synchronous, meaning that there is a simultaneousness of time between trainees and teacher. For this purpose, communication tools, such as chat or videoconferencing, are used. Unlike the face-to-face sessions, the physical space in such CUs is not shared.

There are also asynchronous work methodologies within the scope of distance sessions, where there is no simultaneousness of space and time between trainees and teacher. Instead, there is a specific intention and strategy to guide the work in activities of distance asynchronous mode sessions. This entails the schedule to be previously defined for the execution of the task, a step-by-step clarification of the task, presented in a specific document, which can be a written document or a video. This document identifies the process to help trainees with the task, the necessary resources for the task's implementation, the required final product, and the virtual space for sharing or sending the task.

In case of individual work or work designated by the teacher as asynchronous, the activity is announced in a face-to-face class and some guidelines are given by the teacher. The implementation of the task itself is carried out outside of the face-to-face class space. Students work autonomously, even though there are always guidance available, such as the help forum present in all CUs. This permits each student to work at his own pace, without a fixed schedule. To support the training, the resources and often the final results of these activities and are shared or published in the Learning Management System (LMS).



Active learning methodologies

Teaching method	Characteristics	Benefits	Disadvantages	Intervention
Flipped Learning	<p>It is possible to consider the student's prior knowledge.</p> <p>Start work outside the context of the classroom through resources provided by the teacher (for example: videos).</p> <p>Enlarges the space and time in the classroom.</p> <p>Adapts to individual learning paces.</p> <p>Accessible at anytime, anywhere.</p> <p>The explanations may be repeated as often as necessary.</p> <p>Individualized learning: in the classroom, it offers the possibility of meeting the needs and doubts of each student, in addition to dedicating more time to those who need it most.</p>	<p>Flexibility.</p> <p>It is possible to elaborate further on the content.</p> <p>Transforms the class into an interactive learning space.</p> <p>Possible to respond to the students individual doubts and needs.</p> <p>High levels of student autonomy.</p>	<p>Requires more class preparation time.</p> <p>Not suitable for all students.</p>	<p>Step 1: Create an audiovisual resource about the content you want to teach. Each video must not exceed 10 minutes.</p> <p>Step 2: Share the resource with students on an online platform (Moodle, Canvas, Google Classroom, BlackBoard etc.), so they can view it as often as they need.</p> <p>Step 3: Upload an instrument, quiz, or grid that allows you to record which students viewed the video.</p> <p>Step 4: In the classroom, there will be a brief review and doubts will be resolved and those who want to know more can deepen their knowledge.</p> <p>Step 5: working groups will be formed with the objective of collaboratively systematizing and consolidating the knowledge gathered.</p>



	Collaborative work: in class, it is possible to carry out practical tasks in groups.			
Project-Based Learning	<p>Through PBL, students develop a research and design process aimed at finding the answer to a question.</p> <p>Currently, it is considered one of the most effective active methodologies implemented in educational systems.</p> <p>Allows learning to be flexible.</p> <p>It attributes a great level of importance to the knowledge construction process.</p> <p>Allows a high level of deepening of knowledge by the students.</p> <p>Uses and calls for the development of core (fundamental) skills</p>	<p>Allows the development of student independence.</p> <p>The entire course of the student is very focused on cooperation and collaboration tasks with peers.</p> <p>Develops basic and fundamental skills and abilities.</p> <p>It calls for high levels of student motivation.</p> <p>This methodology can appear as a complement to other learning strategies.</p>	<p>Number and size of working groups.</p> <p>Teacher preparation time.</p> <p>Lack of classroom space.</p> <p>Difficulty for a single teacher to manage all the learning of the groups.</p> <p>Difficulties with technology (lack of resources or infrastructure).</p>	<p>Step 1. Post a challenge or a question and identify ideas.</p> <p>Step 2. Build working groups (eventually define roles).</p> <p>Step 3. Start of investigation: general survey, field collection, etc.</p> <p>Step 4. Organizing, planning, and exchanging ideas.</p> <p>Step 5. Detailed and systematic research and collection of data.</p> <p>Step 6. Analysis, synthesis, and verification of information.</p> <p>Step 7. Preparation of all information obtained in the form of results/conclusions.</p> <p>Step 8. Design of the final product.</p> <p>Step 9. Presenting the final product to the wider community.</p> <p>Step 10. General reflection (in a large group).</p> <p>Step 11. Evaluation. Project.</p>
Problem-based learning	Focus on the learning process.	Learning through problem sets and	What are the disadvantages?	<p>Define/Identify the problem.</p> <p>Explore students' prior knowledge related to the problem.</p>



	<p>Small groups and cooperative learning.</p> <p>Students are responsible for their own learning.</p> <p>Integration of knowledge and skills.</p> <p>Integration of different domains.</p>	<p>contextualized situations.</p> <p>Build knowledge and develop skills such as critical thinking, problem solving, communication and assessment.</p>	<p>Identify what knowledge is necessary to learn to solve the problem.</p> <p>Investigate the problem and look for solutions.</p> <p>Evaluate possible solutions to the problem.</p> <p>Streamline group work (maximum five students) and independent research.</p> <p>The groups define the “learning issues” that they think are raised by each new problem and decide how to divide the work in order to solve them.</p> <p>Assessment is authentic (contextualized and integrated into learning activities) and based on performance.</p>
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