METODOLOGICAL MANUAL

Co-funded by the
Erasmus+ Programme
of the European Union

Table of Contents

1. Development of a MOOC

The term MOOC, created a few years before the first courses in this format appeared, proposed an approach to teaching based on the use of social platforms used for the collaborative sharing of information, in other words, a radically different approach from what was traditional in conventional education.

Perhaps because they are closer to the practices of social and human sciences, these first ideas did not have the impact that their forerunners had hoped for.

Success came only when the classic model of education was used, based on master classes and with strong weight attributed to evaluation, with the pretext of giving the participant a learning experience as effective as possible (Rosselle, Caron & Heutte, 2014; Bartolomé & Steffens, 2015).

In order to form a working basis for the development of the MOOC construction guidelines, it seems to make sense to systematize here some of the most relevant characteristics repeatedly attributed to the MOOC and which end up constituting the differentiating elements on which it is important to center the attention. We refer, in particular:

i) the fact that the MOOC are courses that may simultaneously involve tens of thousands of participants, considering the ease of online access through the Internet and because they are made available openly and free of charge;

ii) the inclusion of a guide to present the activities to be developed, in order to allow the student to know in advance the learning path, indicating the themes or topics to be dealt with and the respective schedule;

iii) the availability of a wide range of resources for autonomous and independent access to content by students. Using the potential of digital and network technologies, the MOOC integrate and/or make available open digital content from various sources, namely public portals, international learning object banks, e-books, among others;

iv) in the case of projects with more financial resources, and in addition to the possible virtual presence of the teacher in the presentation of the contents, the availability of video segments, typically of reduced duration, of up to about 10 minutes each, as a way to replace the traditional classes and aiming above all to keep the student interested in the contents to be learned. In addition, specific platforms or applications can also be developed, such as the strategy known as

gamification, an expanding teaching and learning strategy with recognized potential in the context of MOOC;

v) the exploration of associated discussion forums, administered by teachers or monitors, and in which students ask questions or discuss the matter. Voting mechanisms allow the most important issues to be quickly visible to teachers who can thus clarify at once a large number of students, in addition to keeping this clarification available for the future;

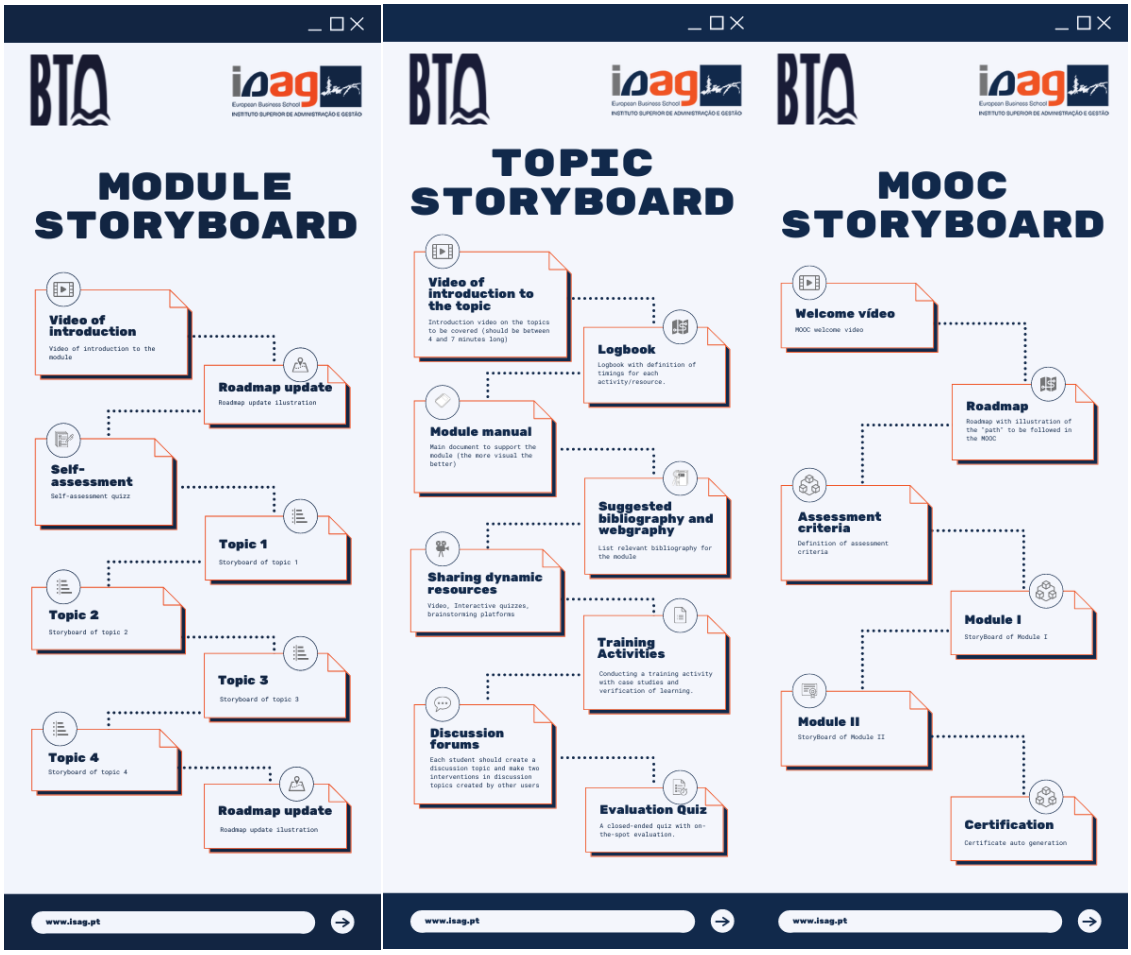
vi) finally, the inclusion of diversified assessment strategies, especially from a formative, interactive perspective, and what some call alternative assessment (alternative to the commonly used methods of implementation and in which a summative and classification logic predominates), being these strategies sometimes incorporated in the video segments themselves with questions that the student is asked to answer to confirm that they are understanding and following the exposed content. An assessment that, given the volume of students involved, both uses automatic processes and bets on exploring the potential that results from students assessing their own colleagues, a peer assessment according to criteria previously established.

1.1 Pedagogy for MOOC

In a synthetic way, we can say that the MOOC movement largely stems from the dissemination of digital technologies that have been witnessed on a global scale in recent years, leading to the emergence of new paradigms in education, more open and flexible, and more consistent, either with the pedagogical potential that these technologies contain, or with the need for a new epistemology of pedagogical practices (Pacheco, 2001; Beyer, 2004; Anderson, 2004; Nóvoa, 2005; Canário, 2005; Marsh & Willis, 2006; McAuley, Stewart, Siemens & Cormier, 2010; Selwyn, 2011; Roldão, 2011).

1.1.1 MOOC Design Template

To ensure the pedagogical coherence of the MOOC course, the different modules and topics, base structures were designed and recommended, which we present on the following figures:



1.2 Setting up the MOOC team

Building a team for MOOC courses can be a critical factor in keeping timelines achievable.

Even if you design your MOOC to be self-directed and facilitation-free, there will still be administration and support tasks that require ongoing involvement to maintain the energy and functionality of your online space. Consider who needs to be involved in an ongoing way to sustain the site.

A	Department support	This should include supervisors, managers, directors in your support framework.
B	Learning design and teaching support teams	Learning, or educational design advice on structuring online learning activities, exploring pedagogies and approaches, web tools, research, and evaluation.
C	Technical support	Support for setting up website, social media accounts, videos, embedding media, backing up, troubleshooting participant problems and as a 'site admin'.
D	In-kind library assistance	Subject liaison librarians can support finding of sharable open access resources, including open access journals and copyright advice.
E	Subject experts	2 or 3 academic subject experts, which could include external industry experts who are comfortable or experienced with the implications of teaching in an open space. Guest lecturers.
F	Grant funding	A research proposal and/or grant funding wrapped around MOOC development may be an effective way to justify and resource academic and professional staff time.
G	Project approach	Provides the structure to pull in resources as needed, establishes a cohesive group energy in moving forward, opportunity to formalize and recognize all contributors.

2. Contents for the MOOC

2.1 Learning Objectives

An important element of the MOOC is the clear definition of the main goal, which informs the participant about the assumptions made and the purpose of the course. From the point of view of the authors of the course, it is an important element in building the course, as it allows to set a reference point for the course content, forms of activity, and to define methods of assessment. Defining the purpose of a MOOC therefore determines the entire course design process.

A well-defined course objective is therefore helpful for all those involved, both for the author, the course provider, and the learner.

One way to define a goal is the SMART method, which adopts specific criteria for a well-prepared MOOC goal. In this approach, the goal should be SMART – so specific, measurable, attainable / achievable, relevant, and time-framed.

The purpose of the MOOC is to achieve specific learning outcomes that demonstrate behavior in terms of knowledge, skills and attitudes. These effects can be expressed as follows: "After completing the course, the participant will be able to …… / will know …… / will be able to understand …..". For the precise formulation of the learning outcomes, verbs are used that describe what the student has learned during the course and what can be measured using the chosen assessment method.

Learning outcomes clearly indicate the areas in which students develop their knowledge and skills.

In summary: the learning objectives and outcomes describe the amount of knowledge, skills and social competences that the learner will acquire during the course.

2.2 Contents

The course content available and visible finally for the learner should be easy to read and their structure should not be complicated (e.g., extensive text with many paragraphs). It is also advisable that the content is divided into graphics (static or interactive), which increases the attractiveness of the course. The layout of this content (along with graphics containing drawings, tables, diagrams, animations, or infographics) should be thoughtful, attractive and effective, especially in terms of the balance of text and graphic elements. Of course, the

way graphics are used depends on the author, his intention, purpose, and the field of the course.

The author can choose from the wide possibilities offered by technology, so they can be detailed images, extensive diagrams and tables, complex infographics, an instructional video, or animation.

2.2.1 Videos explaining the issues

The film is an interesting form of attracting students' attention to the presented issue, especially since the level of concentration of the learner is variable. Of course, the film material can have various forms, although it seems to be more effective than a long lecture, there will be short (approx. 8-10 minutes) films explaining specific issues, preferably with the active participation of the teacher who will draw, show or build during the explanation.

It is especially important that the thematically related videos have appropriate explanations. The learner must know the order in which he should view the prepared material.

2.2.2 Tasks to make learners reflect

This element is especially helpful in preparing courses for people who already have some knowledge of the subject. Questions or additional tasks can be an incentive for deeper reflection or for the student to carry out additional activities. Of course, questions and tasks may be accompanied by instructions from the course author, e.g., on how to solve it, but the decision to include supporting content for the learner should depend on the type of task or the scale of the question's difficulty. The student should be informed about the place where such auxiliary materials are located. It is important that these materials are not answers, but only suggestions that will help to reach certain conclusions. Their role is to encourage reflection, search for new solutions or organize the existing knowledge, and not to provide ready-made answers.

An important effect of using additional questions or reflection-inducing tasks is the activation of passive students and the creation of opportunities to deepen knowledge for active students.

2.2.3 Self-Assessment

Self-Assessment Questionnaire (SAQ) allow you to assess your understanding of the material and should be part of the content of the MOOC. These questions should be adapted to the level of advancement of the student and his knowledge in a specific field. They are also useful for:

- build a body of knowledge,
- repeat the material,
- apply the acquired knowledge to solve a specific task,
- process existing patterns and models.

The control questions should be short and simple, giving the student the opportunity to build an answer based on the acquired knowledge. The self-assessment questions can be more complex, possibly with advice or suggestions for solutions, allowing for a deeper understanding of the content. The role of self-assessment questions is very important as it gives an answer to the question whether the student can move to the next stage (e.g. exercises, continuation of the material), allows for increasing concentration, and also for testing their competences while reaching the next levels of the course.

2.2.4 Questions and tasks in the course content

The layout of the course content must have its own internal order and logic to draw attention to important things. The questions and tasks in the course content can take various forms and levels of difficulty. If the course author decides to do so, they may be accompanied by answers or suggestions for solutions. The inclusion of questions and tasks in the course text aims to draw attention to the most important elements of the course, important issues or particularly important parts. However, remember to keep these questions and tasks short, as they are intended to support the learning process and not to hinder it.

2.2.5 Definitions

An interesting element of the course is the highlighting of the given definitions. This graphic form helps students to separate the definition from the descriptive content.

2.2.6 Tasks to think about

An important element of the course is to encourage independent work, drawing conclusions and individual analysis, which is the most activating and motivating form of learning. This way of learning develops creativity, analytical skills, and the ability to critically evaluate phenomena. It also allows you to discover new solutions, look at issues from different points of view, as well as independently formulate opinions.

2.2.7 Graphics and videos with questions and quizzes

Videos and graphic elements support the learning process effectively. Their layout should correspond to the content of the course. The optimal solution is to add a few questions that will verify the learning outcomes using these elements, preferably with answers, so that the learner can immediately verify his knowledge.

2.2.8 Summary

The course content needs to be summarized. It facilitates concentration on the most important issues and also helps in preparation for the final exam. Such a synthesis of content makes it possible to repeat the most important issues or verify knowledge individually.

2.3 Pedagogy Strategy

There are three basic models of education:

1. Model of self-education – is a mode of individual learning. It is characterized by the student's lack of contact with the teacher and other students. Thanks to the preparation of teaching materials (files, presentations, documents and others), which are developed according to specific assumptions of the course, the student does not require the presence of a teacher.

2. Synchronous model – Internet-based is close to traditional teaching. Its characteristic feature is, among others, real-time interaction (individual and group work, presentation of results, discussion, use of source materials, monitoring of student progress and activity). The most frequently used communication tools in this model are: chat, videoconference, instant messaging.

3. Asynchronous model – a characteristic feature is the partial lack of direct contact with the teacher. Other features are: constant access to educational materials placed on websites and on servers or platforms, longer time for thinking

and answering questions, low cost of teaching. The most frequently used communication tools in this model are: discussion forums, e-mail, websites and chat (so-called chat rooms) at predetermined times of the day.

Of course, there are other ways to identify learning models, but the above-mentioned ones are a classic approach to pedagogical strategies for MOOCs.

2.4 Pedagogy Resources

The aim of the MOOC is to educate the student's individuality and develop his abilities. The course should therefore provide each student with the necessary conditions for his development. Therefore, individual differences in the education process should be taken into account by adapting the content, teaching methods, teaching aids, organizational forms and all pedagogical activities to the general abilities, talents, interests, skills and pace of work of the students. The aim of this approach is to ensure the student's success to the best of his own abilities, and thus to guarantee maximum development opportunities.

The concept of using diverse pedagogical resources is in line with the postulate of autonomy and subjectivity of the student, which is why many lecturers differentiate the education process, achieving measurable effects, e.g., such as: activation and motivation of students to learn, easier and faster memorization of the teaching content, commitment, and satisfaction with participation in the lesson, achieving success to the extent possible of each student. Therefore, it is advisable to use various pedagogical resources, as it determines the achievement of learning outcomes

2.4.1 Educational Video

Film recordings as well as 2D and 3D animations, which are intended to constitute educational material, should be available in a version to be played on the website, i.e., added by an HTML editor (the system has a built-in player).

Each video file should have a subtitle file attached (audio transcription) with its unique name. The text displayed to the user should be visible for a minimum of 3 seconds and should not exceed two to three lines on the screen, and each line of text should be up to 32 characters long. The text should be in sync with the audio track.

2.4.2 Presentation

The multimedia presentation should always be a supplement for the teacher, never its main part. When presenting issues from slides, we should use them as our notes, adding the vast majority of things. An interesting presentation should complement the content provided.

2.4.3 Hypertext

Hypertext - data organization in the form of independent elements linked by hyperlinks. Hypertext is nonlinear and layout unstructured, meaning there is no predefined reading order, and it is entirely up to the user to navigate between them.

2.4.4 Document

The text prepared for the course should be logical, coherent, precise, and error-free. It should be prepared in a language that is understandable, using standard text editors and appropriate standard formatting for headings, bolds, italics, underlining, indexing, enumerations and bullets.

Source files, which constitute an important basis for the implementation of exercises and tasks, should be placed on the Platform as downloadable files. These should be marked "Source Material" in order not to cause confusion about the way it is used. Such marking is important especially in the case of text materials, presentations, audio, etc., which may be mistaken for course content, and not the source material needed to complete a specific task. It is recommended to use files in the Microsoft Office standard (e.g. .docx, .xlsx, .pptx) and Adobe Acrobat Reader (pdf).

2.4.5 Audio

The audio recordings should be available in a version to be played on the website, i.e., added by an HTML editor (the system has a built-in player). MOOC platforms accept a variety of audio file formats, but the most common is .mp3.

2.4.6 Quizzes

The quiz must be an integral part of the course. Depending on the author's assumptions, it may have different types of questions, e.g., single-choice, multiple-choice, drop-down selection, with an open answer (requires the student to enter the answer), with an open numeric answer, with image mapping, drag and drop,

At the beginning, each quiz should explain the rules of operation, which is especially important for the quizzes that determine the success / passing of a module or the entire course.

The questions in the quiz should be understandable and error-free with unambiguous content (text, graphics, or multimedia); have clear, error-free and unambiguous answers (text, graphic or multimedia); give feedback (graphic and text) on the correctness (correct answer, wrong answer); give feedback (text, graphic or multimedia) regarding the given answer.

A quiz may be scored at the level of questions or the entire quiz, therefore the author should prepare a user-friendly, consistent, and unambiguous instruction.

2.4.7 Wiki and database

MOOCs can use databases as a collection of tables containing specific information and tools that are used to transform and retrieve data. In order for the student to be able to skillfully use this tool, he should know the basic structures:

- Scheme - a system containing all objects listed below, with the possibility of granting permissions.

- Table - a set of unified records describing a given object.

- Record - a single row in the table.

- Field - one selected field from the row that stores one data.

An example of databases in MOOCs are bibliographic databases, which play a significant role in developing interest in a given issue, expanding knowledge on this subject or in searching for new solutions. They also allow you to find the results of research carried out in various research centers.

2.4.8 Projects

The project is a team or individual activity. It consists in solving a problem by searching for and selecting the necessary information and building a resource of necessary knowledge. It should be accompanied by asking questions and searching for answers to them. A student who, by observing his surroundings, finds something that he wants to explore, change, or enrich, becomes the initiator of his own learning. It is he who sets goals, formulates tasks, assesses the level of their implementation, and presents the results of his work in public. Working using the project method is an extremely comprehensive didactic strategy, combining many techniques, requiring careful preparation by the teacher and a very large

involvement of students. A well-conducted project brings not only satisfaction, but also allows you to gain deep knowledge and practice various skills, and above all, to consolidate them effectively.

Working on a project teaches you to make decisions, work with people of different characters, and allows you to get to know your own abilities. It also prepares for professional life, as projects are commonplace in many workplaces. A good project is one that broadens the student's mental horizons, deepens his or her knowledge, meets the assumptions of the curriculum and, above all, combines theory with practice.

2.5 Evaluation Methods

The assessment of the achievement of learning outcomes should be based on the assessment criteria described in the MOOC.

In order to properly verify the achievement of learning outcomes as part of the MOOC course, it is necessary to select appropriate instruments that allow for evaluation (e.g., appropriate platforms for tests and written assignments or videoconferencing tools allowing for direct contact with the student, which at the same time will allow checking the independence of work during credits). There should also be regulations regarding the situation in the event of technical problems.

3. Implementation of a MOOC

The implementation of the MOOCs has advantages which make them attractive to many online learners. One of them is that they are free which allows students to learn new skills without paying the high price of college tuition. Being independent courses, they are open to anyone, regardless of background. They are also open to anyone around the world and so are not limited by geographic proximity to a university campus and are designed to accommodate large numbers of students at any given time, which again makes them very accessible.

3.1 MOOC models

Starting from pedagogical approaches and training functions of MOOCs, there are following main types of MOOCs:

→ Connectivits MOOCS (cMOOC)

→ MOOCs as eXtension
→ Quasi MOOC
→ SPOC (small private online course),[1]
→ COOC (corporate open online course),
→ BOOC (big open online course),
→ aMOOC (adaptive massively open online course),
→ bMOOC (blended massive open online course),
→ sMOOC (semi-massive open online course)

3.2 Definition of MOOC model

According to the report "Institutional MOOC strategies in Europe" a large majority of the institutions (71,6%) "MOOCs should provide a sustainable model for the mass". In addition, 50,1% finds it (highly) relevant for their institution that "MOOCs must be designed for massive audience".

A) Connectivits MOOCS (cMOOC) is associated with a socially-constructivist pedagogical approach to learning. This type is using blogs, wikis, social media for searching knowledge. The most of interactions take place in format learner-learner and learner-teacher. The main aim of this type is the accumulation of knowledge, creativity, and communication of participants, to improve the quality of education through the strengthening of horizontal links and stimulation of joint cooperation in groups of learners. The pedagogical approach is flexible and sensitive to the specific needs of participants. It helps to discover mind-people and gives an opportunity to expend the network of contacts.

B) MOOCs as eXtension of something else (xMOOCs) is using the behavior principles of acquiring knowledge, by repetition and testing of knowledge. This type contains lecture, quizzes to test the mastery of theoretical material, forums for communicating with the instructor and the other students of the course. This brings together xMOOC with the format of the traditional academic courses. Usually, students must comply with the deadline for submitting completed assignments. The content of the courses is focused on duplication of knowledge. The goal of xMOOC is ***effective delivering of content to a wider audience***. This type of MOOC uses its own technology platform. Three main providers Coursera, edX, and Udacity use xMOOCs. The typescMOOC and xMOOC were introduced by Stephen Downes, one of the creators of the first cMOOC (2008)[2].

[1] Kaplan, A.M., Haenlein, M.: Highereducation and the digital revolution: AboutMOOCs, SPOCs, social media, and the Cookie Monster. Business Horizons 59(4), 441-450 (2016)

[2]Liyanagunawardena, T.R.: Massive Open Online Courses. Humanities 4(1). 35-41 (2015)

C) Quasi MOOC uses online training, offers online courses, representing an online resource, for example, such as open courses: Khan Academy or MIT OpenCourseWare. Online quasi-MOOCs are developed by teachers that can be not certified. The purpose of the quasi-MOOC is ***to provide access to collections of free learning of the mini lections*** in various disciplines and for different age groups of students.

D) hMOOC is the hybrid MOOC or MOOC 3.0. This concept supports hybrid or flipped classes, integrates, and combines online and face-to-face teaching / learning.

3.3 Development of MOOC Scripts

Description of the script has the role to help students to learn and to understand more deeply, to learn how to use technology of the MOOC.

In the Script phase, the lecturers do the main part of their work. The course responsible(s) and production team has the important role of ensuring a well-structured course through review, coordination, and feedback to lecturers. When creating content for an online course, most people tend to focus on the script or notes for the video lecture. But as already stated, we would like to help lecturers think differently: Think Learner, Think Activity, Think Visually – before you think My Presentation.

Micro-scripts address the specific interactions that occur during each task or activity: who initiates the exchange? Does everyone get to speak? Does one student engage with another's idea?

3.3.1 Global Script

The Global script need to be appealing and useful to a wide audience, aiming for broad motivation, but also explicitly catering to different groups of learners. Ideally, the global script will not offer different ways and levels of participation, but also design the script such that those different groups served as important resources for one other. This is one of the real promises of a knowledge community approach, that it captures and benefits from the diversity within the community, as opposed to conventional lecture-based or didactic pedagogies that typically address the lowest common denominator.

3.3.2 Module Script

The module script focuses on supporting higher level academic and self-regulatory skills and the enforced uneven distribution of knowledge. For example, a jigsaw design makes students more likely to value their peer's idea. The teacher

has an important role as a guide through the whole project, making sure that students are modeling higher-level skills in a progression from modeling, to coaching, to scaffolding, all the while gradually providing more autonomy to the students. The module script provides a large space for students to explore their own interests, provide reach input and ideas into the community, and co-create an authentic final product.

3.3.3 Topic Script

Is related with choosing a topic, thinking about the requirements of assignment. The course can take the form of a toolkit which allows learners to select a topic. Learners are invited to choose the topics that interest them the most. The topic script is recommended for presenting short pieces of content that belong to the same category but are independent from each other. The content can be descriptions of tools, steps of a procedure, stages of a process or frequently asked questions on a given topic. Learners are invited to navigate the toolkit in a non-linear fashion, since a logical order is not necessary, and learners may only be interested in some of the tools.

3.4 Equipment Setup & Specs for use in development of Online Course

In order to be able to proceed a MOOC, each beneficiary will need an adequate equipment. The capacities of learners' computers, as well as their infrastructure and connectivity, need to be considered before making any decisions on technology.

Understanding whether learners have easy Access to network systems is crucial when deciding on the delivery format. Being aware of band width limitations is particularly important. In the event of limited Internet access, for example, it may be necessary to provide materials offline in a down loadable format, or to deliver training through mobile technology. In this latter case, a mobile responsive format – which can be properly visualized on tablets and mobile phones – may need to be adopted.

Technical requirements, including multimedia capabilities, influence the selection of the media mix. However, it should be noted that using several different media tools does not necessarily improve the effectiveness of an e-learning activity. Good instructional design is more critical to achieving learning effectiveness than using sophisticated multimedia effects. If delivery on mobile phones is considered, you may want to collect information about the type of

smart phone used by participants, and the data plan that they have agreed with the telephone company.

However, it is important to bear in mind that development costs for interactive content have dramatically declined due to the development of new authoring tools. Moreover, e-learning materials can be reused several times in different versions of the same online course, or as components of different online courses. Knowing the number of learners and how many learning events are planned in the future is therefore important in assessing the cost impact.

If planning a facilitated course, the organization must have appropriate resources to ensure facilitation and subject matter experts' support throughout the course.

Using a learner management system can be a valid option for the organization, if there is a need to track learners' activities by following their participation and performance, for example their contributions to online discussions, use of learning materials and online evaluation test results.

3.5 Postproduction Processes & Standards

There shall be a post-production team consisting of the Video Editor, Sound Editor and Music team, equipped with video editing software working in Non-Linear Editing System (NLE) along with suitable equipment listed in Check list. They shall be responsible for:

- Video editing the program using HD parameters.
- Writing, (re)recording and editing the soundtrack if needed.
- Adding visual special effects, multimedia effects and computer-generated imagery (CGI).
- Sound re-recording or mixing with professional audio equipment.

Quality check list for facilitated MOOCs:

General
A course description is provided, which describes the target audience, objectives, course outline, duration, strategy, and assessment elements.
A code of conduct is provided, and participants are required to comply with it (especially for MOOCs/ large number of participants).
The course learning objectives are clearly stated for each course section.
A course syllabus is provided to give an overall view of the course.

Sufficient time is allocated for each course session to achieve the learning objectives.
Activities support the achievement of the learning objectives.
Both individual and collaborative learning activities are included.
Clear instructions are provided for each activity.
Learners can always check their progress and know where they are in the course.
Pre-course activities allow learners to become familiar with the learning environment.
A tutorial is provided to guide learners throughout the course.

Content
Learning materials are relevant to the learning objective of each session.
Learning materials are varied and include different types of content and format.
Learning materials are brief and grouped into small sections.
Learning materials introducing new knowledge are linked to an activity (practice, test or discussion).
An offline version of interactive content is provided to address low-band width connections.
Learning materials are designed by applying quality criteria for e-learning content

Social interaction
Communication tools reflect learners' characteristics (e.g., familiarity with technology).
Learners can introduce themselves and state their interests at the beginning of the course.
Learners can ask questions of facilitators and subject matter experts.
Learners can share reflections with other participants.
Online discussions are guided by meaningful questions or instructions.
Online discussions are monitored and moderated by facilitators and subject matter experts.
Communication among the participants is monitored to avoid any offensive behavior, e.g., use of swear words, discriminatory language (especially for MOOCs/ large number of participants).

Virtual live events are carefully presented to learners, including instructions for participation.
Virtual live events are conducted in a dynamic way, using a variety of tools (e.g., break out rooms, chat, polls, collaborative working documents, whiteboards) in addition to experts' presentations.
Learners are provided with a communication channel to continue networking and sharing experience/knowledge, e.g., a mailing list.

Assessments
Self-assessments are used throughout the course to reinforce learning.
Practice exercises and assessments are aligned with the learning objectives.
Assessments are explained through clear and appropriate instructions.
The assessments comprise verbal types of exercise.
When learners perform assessments, timely feedback is provided.
If course activities (discussions, collaborative work) are used for assessment, this is clearly communicated to the learners.
The final assessment, if present, verifies the achievement of all main learning objectives.
A final certificate is provided to learners who completed the course successfully.

User feedback
Learners are encouraged to share feedback on their course experience.
Discussion forums are used and analyzed together feedback from the learners.
Course feedback survey is provided at the end of the course for an immediate impact assessment.
Learners are followed up periodically after finishing the course via surveys and/or interviews, to determine if they applied what they learned in the course to real-life situations and together learner stories.

4. Analysis and Evaluation

4.1 Profile of the student

When designing and implementing the MOOC it´s important to define the general profile of the target audience who the course is ideally aimed at. To do so, from a pedagogical point of view, it should be taken into consideration the experience, interests, needs and ambitions.

4.1.1 Participant Signups

Sign-up rates are very hard to prejudge with a MOOC which requires advertising to increase take-up throughout pre-course build up and continuing into the first week.

In terms of signups categories, we can identify the following:

- Learners - an individual who viewed at least one step;
- Active Learners - learners who marked at least one step complete;
- Returning Learners - learners who completed steps in more than one week;
- Social Learners - learners who made at least one comment;
- Fully Participating Learners - learners who completed a majority of steps.

However, it should be noted that some learners may wish to observe the course and therefore may be considered 'silent' learners.

4.1.2 Gender Demographics

It is crucial for anyone offering a course of studies to understand and know the male-female ratio of participants. This will make it easier to understand who is enrolling in the course and whether the balance changes over time. Participants can identify themselves with a gender by selecting Female, Male, or Other/Prefer not to say. The count of registered participants, with gender breakdown will be available for the team. In the possibility of a gender imbalance, the team will also have the opportunity to look into possible contributing actors, whereby it can modify and better evolve the content and deliverables.

4.1.3 Education Levels

The vast majority of participants enrolled in MOOCs have an undergraduate degree or higher, which highlight a large cohort of returning adult learners.

In terms of education levels, we can divide the participants in three categories: No University Education; Undergraduate Degree or Higher; and Did Not Answer.

4.1.4 Age Range

There is no definite age range. Albeit, due to the nature of the content and the maturity of the subject, the minimum age will be that of 18 years. Nevertheless, on the basis of the European Commissions' endeavor to promote key competences, knowledge and perspectives facilitating lifelong learning, there will be no stipulated definite age limit.

Below the age ranges to be applied in the MOOC is identified:

- 18 years old or under
- 18 - 25 years old
- 26 - 35 years old

- 36 - 45 years old
- 46 - 55 years old
- 56 - 65 years old
- 66 years old or over
- Did Not Answer

4.1.5 Location

A tracking tool may be set through the determination of the students/ lecturers/ universities that enrol in the MOOC. It is important to collect/understand the location of the participants in order to understand where they come from and eventually implement some measures to reach other countries and audience.

4.1.6 Course Completion

This will be done in the form of a report by which each participant will be provided with a reference indicating all the modules that were covered and completed by them. The criteria can include meeting an activity's grade level or a manual checking "complete" by either the student and/or the teacher. A software agent should display and automatic inquiry to understand the reason why a participant didn't complete a certain topic and/or module. Examples of indicators may include: "I participated and took part all the way through the course"/ " I just took part in some of the sections of the course"/ "I did not take part in the course"/ "Did not answer".

4.1.7 Statement of Participation

This Statement of Participation shall state that the respective person has participated in the MOOC. It will contain the name, the duration of the course, and information about the course content. This Statement of Participation will be accessible and downloadable. It will demonstrate the successful completion of the course, the interest in the subject and ones' commitment to their career.

4.1.8 MOOC Team Experience

The ideal team will be composed of individuals coming from different countries around Europe. Their portfolios and experiences should be diverse. This sense of diversity will surely add value to the production of the respective MOOC. The different realities, cultures and experiences will produce content with a notable degree of specialisation, balance, and broad interests. As a result, irrespective of the different realities and specific culture of the participant, the contents shall be produced in a manner which will make any participant comfortable to relate to and, understand.

5. BTO MOOC Course

5.1 Description of the course

Blue tourism is a rising sector. Taking into consideration the annual economic report on the blue economy of the EU presented by the European Commission, "coastal tourism is the largest contributor in terms of jobs, value added and profits, contributing significantly more to jobs than to GVA and/or profits ".

This MOOC course will allow the improvement of the skills of graduates and university students (ideal target audience) to gain an entrepreneurial character in the knowledge of blue tourism.

5.2 Target Audience

Our main target audience are higher education students. However, some groups can also be considered a target of this project such as: universities linked to the tourism sector; students and university graduates with entrepreneurial character; university teachers; organizations and entrepreneurs associations; chambers of commerce and entrepreneur support centers / start-up incubators.

5.3 Learning Objectives

The general learning objectives of the BTO MOOC are the improvement of business skills, including the business social skills of graduates in higher education; the implementation of curricula and training programs in universities that meet the needs of the blue tourism industry; the improvement of the professional competence of university professors in relation to the MOOC method in areas related to entrepreneurship in blue tourism.

The MOOC is divided in two modules: blue maritime and coastal tourism and business entrepreneurship. The learning objectives of the first module are: Learn the technical terminology of Blue Marine and Coastal tourism; Learn the political and regulatory framework for Blue Marine and coastal tourism; Knowledge acquirement in sustainable tourism evolution; Understand and define better the ecological impacts of coastal and marine tourism; Integrate financing sustainable tourism planning using management and monitoring tools; Study and define strategies and good practices; Disseminate field learnings and, develop common policy recommendations for policymakers, tourism stakeholders and other relevant institutional and civil society actors.

For the second module, the learning objectives consists in: Define and understand the concepts of entrepreneurship and innovation and their interconnection with Blue Tourism; Analyze the profile of the entrepreneur; Provide an integrated view of business in the context of entrepreneurship; Understand, analyze, select and implement strategies for business; and develop a business plan.

5.4 Contents

Module I: Blue Maritime and Coastal Tourism

1. Global overview of coastal maritime tourism
    1.1 Definitions, Issues and Trends
    1.2 Overview of the Coastal & Maritime Tourism Industry
    1.3 Structure and Governance of Coastal and Maritime Tourism
2. Sustainable tourism: concepts, frameworks, actors, and tools
    2.1 Key Institutional Frameworks Related to Sustainable Tourism
    2.2 CMT, Agenda 2030 and the Paris Agreement
    2.3 Financing Sustainable Tourism
    2.4 Planning, Management, and Monitoring Tools
3. State of coastal and maritime tourism: case studies
    3.1 Hotels and Resorts
    3.2 Cruising
    3.3 Ecotourism
4. Blue economy
    4.1 Concept & Economic model
    4.2 The Logic of Ecosystems

Module II: Business Entrepreneurship

1. Leadership, creativity, and critical thinking

1.1 Concept & Framework

1.2 Management of Teams: Soft Skills

1.3 Individual and Collective Conscience in Leadership

1.4 Team Intelligence

2. Innovative strategies for business
3. Business plan and creation of a company
4. Entrepreneurship in blue tourism ecosystem.

5.5 Pre-requisites

The participants of the MOOC should be students or professionals in the fields of tourism, management, or economy, with a general knowledge of tourism, from higher education level.

All participants should have access to IT equipment's (computer or cellphone) and internet.

5.6 Strategies

We implemented a user centered design strategy that comprises the best practices and effective design of student interaction within virtual learning environments. In this case the student will have total control of his path through the course, defining his own timings and completing the tasks and challenges when he feels like. There will be, of course, some precedencies that will have to be considered and the system itself will oversee the behavior of the MOOC structure.

5.7 Teaching modalities

The contents of this course will be exposed in practical classes, which will combine theoretical exposition with a discussion and solving of practical cases. During the classes, students will be encouraged to express their understanding of the contents exposed, through an assessment exam after the end of each topic.

The evaluation system comprises a continuous evaluation according to a pre-defined planification with assignments.

The certificate that students will obtain will only say 'completed successfully 40hrs/passed' and the learning outcomes will be at the end of each module. It will professors that will assess the materials and assign the value in ECTS or other way to measure once they use the materials in their institutions.

5.8 Accessibility

All the materials made available in the BTO platform are expected to meet accessibility standards. The platform is designed to allow this to be relatively easily incorporated and includes image description for alt text screen readers, video captioning and transcripts for video and audio content. All video content must contain video captions and transcripts. For this a website called 3playmedia is used.

The service provided by 3playmedia meant that a high degree of confidence in the accuracy of transcripts was possible, but it was nevertheless necessary to proofread all transcripts before upload to eliminate minor errors.

Another point to consider is the use of alt text. In essence, all images must contain an image description that describes the context of the image so it can be read aloud by a screen reader or displays as text if the user's device cannot display the image.

5.9 Forms of evaluation

In the beginning of each module the participants will be subject to a self-assessment exam to evaluate their level of knowledge about the subject.
In the end of the module the student will be subject to a quiz in order to evaluate the knowledge acquired during the course. At the end of MOOC, the student will be subject to a final quiz, which will be condition to issue the certificate.

5.10 MOOC Team

As mentioned in topic 1.2 setting up the MOOC team is vital for the success of the entire project, not only on building the MOOC, but also for maintenance through time.

Considering all the needs identified for the BTO MOOC, the team was built with members of the distinctive project partners as follows:

A	Department support	INNETICA

B	Learning design and teaching support teams	Skills Zone Malta
C	Technical support	Glandrive
D	In-kind library assistance	INCDT
E	Subject experts	ISAG & SGTiHV

Bibliography

Anderson, T. (2004). Toward a Theory for Online Learning. InJ. Anderson e F. Elloumi (Eds.). Theory and practice of online learning. Athabasca, AB: Athabasca University, pp. 33-60.

Barge, P., Londhe, B.R. 2014. *From Teaching, Learning to Assessment: MOODLE Experience at B'School in India,* Procedia Economics and Finance, Vol.11, pages 857-865. https://www.sciencedirect.com/science/article/pii/S2212567114002494#!

Bartolomé, A. (2008). A Web 2.0 e os novos paradigmas da aprendizagem. Open Education Europa. Disponível em: http://www.openeducationeuropa.eu/pt/ node/4012

Beyer L. (2004). Direções do currículo: as realidades e as possibilidades dos conflitos políticos, morais e sociais. InCurrículo sem fronteiras, 4, 72-100.

Canário, R. (2005). O que é a Escola? Um ―olharll sociológico. Porto: Porto Editora.

Kruse A. (2015), *Making a MOOC at TUM: A Handbook for Instructors and Course Teams*, the Technische Universität München (TUM),8, https://www.tum.de/en/lifelong-learning/innovation-in-teaching-and-continuing-education/moocs-attum?get=params&cHash=74d139145cdcc6b17f3025b76cfdf666
Marsh C.J. & Willis G. (2006). Curriculum: alternative approaches, ongoing issues. Pearson Education, USA.

McAuley A., Stewart B., Siemens G. & Cormier D. (2010) *MASSIVE OPEN ONLINE COURSES Digital ways of knowing and learning* Created through funding received by the University of Prince Edward Island through the Social Sciences and Humanities Research Council's "Knowledge Synthesis Grants on the Digital Economy ", 10. https://www.scirp.org/(S(351jmbntvnsjt1aadkposzje))/reference/ReferencesPapers.aspx?ReferenceID=1342726

Mcauley, A., Stewart, B., Siemens, G. & Cormier, D. (2010). The MOOC Model for Digital Practice. Acedido em 29/03/2015, em http://www.edukwest.com/wp-content/uploads/2011/07/MOOC_Final.pdf.

Mertz B.E., Zhu H, Trowbridge A., Baumann A.,(2018*) Development and Implementation of a MOOC Introduction to Engineering Course*, c American Society for Engineering Education, https://www.asee.org/public/conferences/106/papers/21286/view

Mosbech A-M, (2014) *MOOC Unit,* University of Copenhagen CSS Campus, https://moocs.ku.dk/report/UCPH_MOOC_Start-up_Guide_11Marts2018.pdf
Nóvoa A.(2005). E vid ente mente. Histórias da educação. Porto: Edições ASA.

Pacheco J.A. (2001). Currículo e tecnologia: a reorganização dos processos de aprendizagem. InA. Estrela & J. Ferreira (orgs). Tecnologias em educação: estudos e investigações. X Colóquio da AFIRSE, pp. 66-76.

Roldão, M. C. (2011). Um currículo de currículos. Chamusca: Edições Cosmos.

Rosselle, M, Caron, P. & Heutte, J. (2014). A Typology and Dimensions of a De-scription Framework for MOOCs. InU. Cress e C. D. Kloos, European MOOCs Stakeholders Summit 2014, eMOOCs 2014, pp.130-139. Acedido em 25/02/2015, em http://www.emoocs2014.eu/sites/default/files/Proceedings-Moocs-Summit-2014.pdf.

Selwyn, N. (2011). Em Defesa da Diferença Digital: uma Abordagem Crítica sobre os Desafios Curriculares da Web 2.0. InP. Dias & A. Osório (Orgs.). Aprendizagem (In)Formal na Web Social. Braga: Centro de Competência da Universidade do Minho.

Spyropoulou1 N., Pierrakeas C., Kameas A.,(2014) *CREATING MOOC GUIDELINES BASED ON BEST PRACTICES, 7,* https://www.researchgate.net/publication/281555098_Creating_MOOC_Guidelines_based_on_best_practices

Stian Håklev, (2016) Seminar to Lecture to MOOC: Scripting and Orchestration at Scale. *A thesis submitted in conformity with the requirements for the degree of Doctor of Philosophy Curriculum, Teaching and Learning Ontario* Institute for Studies in Education University of Toronto, 30. https://www.researchgate.net/publication/316605280_From_Seminar_to_Lecture_to_MOOC_Scripting_and_Orchestration_at_Scale_From_Seminar_to_Lecture_to_MOOC_Scripting_and_Orchestration_at_Scale