



SCORE2020

Output 5 SCORE2020:  
*Instructional design models  
for different types and  
settings of MOOCs*

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# SCORE2020

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## Introduction

Concerning the instructional design models to be employed with MOOCs, MOOCs have been classified by Stephen Downes (Siemens, 2012) into two distinct types: xMOOCs (Extended MOOCs) and cMOOCs (Connectivist MOOCs). xMOOCs are designed to be run like a classical university lecture or seminar, with a “top-down” model with one (or more) experts designing the learning journey and providing their knowledge to a group of learners. From the other side, the key concept behind cMOOCs is the networking, i.e. the learners may go anywhere to locate sources of information. cMOOCs provide variety of approaches in a dynamic constantly changing learning environment requiring learners to take full control of their own activities and by this reason these courses are characterised as learner-centred (Lackner & Kopp, 2014). Recently, mixed approaches are applied, combining for example social learning activities through online collaborative tools, connectivism (Siemens, 2005), and constructivist approaches for implementation of learning-by-doing and discovery learning activities for knowledge construction. Next, a variety of gamification techniques are integrated into the course in order for the learners to be motivated and stimulated to strive for better achievements and progress in the course.

In describing possible models for MOOCs and other open, online courses, one might refer to the use of technology in where learning takes place (class-room / online) and the role of technology by what means learning is ‘delivered’ (mobile, PC, books, etc.). Moreover, in discussing the pedagogical models of MOOCs one refers to about how participants learn. All approaches in literature emphasise the importance of learner activity, constructive alignment of activities with desired outcomes, the importance of feedback opportunities for consolidation (practice) and integration. However, they differ in the role and importance of other people, the authenticity of the learning activity, the formality of activity structures and sequences, the emphasis on retention/reproduction or reflection/internalisation and the locus of control.

However, these approaches very much focus on the micro level. In the SCORE2020 project it is emphasised to design and deliver MOOCs in connection to the meso and macro levels. The relation to the macro level is already evident as learning is in general recognised as an engine for individual, social and economic development. As such, it is highly advantageous for both individuals and society to invest in education. This is especially the case for MOOCs where institutional objectives are involved as well (e.g., using MOOCs for cost reduction, marketing, reaching new students, etc.). It is therefore of importance to incorporate these institutional objectives in designing MOOCs. On the other hand, one needs to be aware how meso-macro level developments influence the pedagogy used. For example, the dominance of commercial MOOC providers such as Coursera, EdX and Udacity in North America, has shaped the pedagogy they have adopted. The cMOOC and xMOOC distinction in MOOCs is the main categorisation used in considering their pedagogy. This grew out of the manner in which MOOCs were developed, and reflects how MOOCs are viewed by their developers. This platform dominance is not as prevalent in Europe, with many universities developing their own platforms. Moreover, European institutions have different reasons to be involved in MOOCs (for example Jansen & Goes, 2016). How MOOCs are used differ strongly between several target groups and stakeholders. Depending on which of these motivations is most prevalent will influence the type of pedagogy adopted.

MOOCs vary considerably the one from the other depending on the aim and on the subject (e.g.

theoretical subjects vs training/project-oriented subjects). Because of that, it is important to define modular guidelines that highlight the relevant elements in a flexible way, in order to support the MOOC design process from time to time. In essence MOOCs share with other forms of online and distance education that they need to be designed carefully beforehand.

## General design instructions

### Reflections on different pedagogical principles

In describing possible MOOC models, one might refer to the use of technology supporting where learning takes place (either in a classroom or online) and by what means learning is delivered (mobile, PC, books, etc.). However, when discussing the pedagogical models of MOOCs, one generally refers to how participants learn. In this case, the important dimensions of learning are:

- chronology (i.e., synchronous and asynchronous intervention);
- the roles of learners and teachers in education;
- the different focuses, aims and directions of the learning (e.g., instructor-directed versus learner-directed);
- personalisation; and
- openness.

Classifications of pedagogies typically include three very general categories: cognitive-behaviourist, socio-constructivist and connectivist (Dron & Anderson, 2011). The xMOOC versus cMOOC debate is useful on a general level, but it is not particularly helpful on the micro level — that is, when determining how to structure learning activities to foster effective, efficient and enjoyable learning.

It is generally known that people learn by association, building ideas or skills step by step through active discovery and/or dialogue (e.g., social-constructive learning), and/or they learn by participating in (situated) practice (e.g., apprenticeship). All of these approaches emphasise the importance of (i) learner activity, (ii) the constructive alignment of activities with desired outcomes and (iii) feedback opportunities for consolidation (practice) and integration. However, they differ in the role and importance of other people, the authenticity of the learning activity, the formality of activity structures and sequences, the emphasis on retention/reproduction or reflection/internalisation, and the locus of control. A considerable amount of research is already available on these issues, based on decades of experience with distance education and eLearning (see Bates, 2015; Sloep, 2014).

The main discussions about developing MOOCs are related to different pedagogical principles. As such, development strategies and costs differ amongst these various MOOCs. This outputs describes only with the basic principles of developing MOOCs and consequently does not describe all pedagogical concepts at a micro level as many handbook and papers are available. Some other MOOC models will be highlighted possibly more relevant for open education (sMOOCs and open layers).

### Develop MOOCs iteratively

Because the design of educational interventions is typically carried out in an iterative cycle, this method is also recommended for the development of a MOOC. A design methodology can support

this. An example is the ADDIE model, an educational development programme consisting of five phases: analysis, design, development, implementation and evaluation (Bates, 2015).

The development of a MOOC can occur iteratively between different runs of the MOOC, but one can also choose either a slower pace (improvement after a few MOOC runs) or a faster pace (improvement as part of the MOOC run itself). It is essential to start with analysing the context, conceptualising the design, and setting goals — determining why the MOOC is being developed and for whom (from a user's point of view and from the institutional and societal points of view). Then, the iteration cycle should be designed right from the start (including instruments for continuous analysis and evaluation).

This and other development cycles can be applied at different levels of granularity (e.g., learning activity, module, course or programme). For the learning design cycle as a whole, and at each level of granularity, there are common concepts for which services can be delivered to enhance and support the different development phases of MOOCs. The Larnaca Declaration on Learning Design (Dalziel et al., 2013) provides an excellent overview of these common concepts.

### The need for continuous evaluation

Irrespective of their type, MOOCs could be a useful tool for improving education and lifelong learning. MOOCs serve a certain aim, and their success or failure in doing so should be evaluated. For example, at an institutional level, the following processes should be evaluated on a regular basis:

- It is essential to examine the impact of MOOCs on the institution's present and potential customers.
- MOOCs influence an institution's processes and resources both positively and negatively. All these major influences should be evaluated.
- High-quality MOOCs require significant financial resources, while their financial benefits are subtler and tentative. These must be evaluated.
- The impact of MOOCs should be evaluated based on their business model, not on the business model of the given institution, which may have a significantly different one.

MOOCs are a significant innovation in (higher) education. Therefore, whether or not to develop them is a strategic decision for education institutions. The decision should involve not only experts from various parts of the HEI (e.g., technology, teaching, research, marketing) but also top decision makers.

Moreover, MOOCs are not only an instrument for educational institutions — essentially, they are related to goals at a general societal level (e.g., increasing access to education), at a regional level (enhancing the circulation of knowledge relevant for local society), and at a learner's level. Different evaluation schemes are needed for these different levels and should be part of the QA processes of MOOCs (see output 8).

## Interaction between macro, meso and micro level

### Different goals result in various MOOCs

#### Designing for different types of learners

The MOOC hype in the media might be over, but investment and uptake of MOOCs are increasing significantly worldwide. By the end of 2015, approximately 4,200 courses were offered by 500+ universities to 35 million students. This has increased by 2016 to 6,850 courses by over 700 universities to 58 million students (Class Central, 2016).

#### Bias in MOOC data about learners

However, these figures exclude many European MOOC offerings as Class Central mainly list MOOC offerings of the big (commercial) MOOC platforms. Many European universities have built an own platform or use a regional platform with a limited visibility. Most universities are not accepted by the big MOOC platforms in the US by lacking the reputation (in ranking) and finances to become a partner. Consequently European efforts in MOOCs are less visible. Also the efforts of OpenEducationEuropa to make European MOOC efforts were incomplete and were stopped recently.

Consequently, also research data about MOOC participants, needs in society, etc. are strongly biased towards US dominance and lack evidence what really is going on in Europe. As many European MOOC efforts are local, there is a lack of coherent research at a European level. Only recently some efforts at European scale were conducted (MOOCknowledge, IPTS, BizMOOC project and by Jansen&Goes, 2016). These results indicate a distinct European uptake of MOOCs related to different needs.

#### Why learners are involved in MOOCs

Although some argue that MOOCs have the potential to make high-quality education available for everyone, in reality, access seems mainly limited to a specific category of learners. Ho and colleagues (2015) analysed 68 MOOCs offered by Harvard and MIT from Fall 2012 to Summer 2014 and identified the following learner characteristics:

- 71% of the participants already had a bachelor's degree or higher.
- 53% were under 30 years of age.
- 32% were based in the United States.
- 31% were female.

Learners have different goals when following a MOOC. These goals are reflected in the way a learner takes a MOOC. In a study of subpopulations of MOOC participants, Kizilcec, Piech and Schneider (2013) showed that MOOC participants can have very different objectives. The authors identified four prototypical types of learner engagement in MOOCs: completing, auditing, disengaging and sampling. Hill (2013) has identified five categories of learners' behaviour in a MOOC:

- No-shows: register but never log in to the course while it is active.
- Observers: log in and may read content or browse discussions, but do not take any form of assessment beyond pop-up quizzes embedded in videos.
- Drop-ins: perform some activity (watch videos, browse or participate in the discussion forum)

for a select topic within the course but do not attempt to complete the entire course.

- Passive participants: view a course as content to consume. They may watch videos, take quizzes and/or read discussion forums but generally do not engage with the assignments.
- Active participants: fully intend to participate in the MOOC and take part in discussion forums, the majority of assignments and all quizzes and assessments.

A study by Wang and Baker (2015) has shown that participants who expected to finish a MOOC were more likely to do so, compared to participants who did not think they would complete the course. This motivation in the category of “active participants” is a good predictor for completing a MOOC. Although this finding is in line with the findings of other studies, they concluded that further research is needed to gain more insight into the motivations of MOOC participants and how these relate to MOOC design, in order to provide a learning experience worthwhile for a large community of learners.

We must realise, though, that these motivations were reported by learners with specific characteristics and do not necessarily reflect the motivations of learners who are not yet well educated. In this regard, the example of open online course layers (Bang, Dalsgaard, Kjaer & O’Donovan, 2016) perfectly illustrates the importance of designing for specific target groups - i.e., one needs to know the preferences, limitations and other challenges of the target group for which one is developing a particular course.

Course designers can use personas to represent typical learner groups. Learning analytics is an essential part in completing the connection between design and evaluation as part of the iterative cycle. Such research is starting to show how to use these data to improve courses so that they better fit a global audience of culturally diverse learners.

### Designing for different institutional goals

On the next level, the design and delivery of the MOOC should align with the aims of the educational institution — i.e., the MOOC must contribute to the various institutional goals. Much of the literature and the academic discussion about institutional strategic planning of MOOCs has been centred on the U.S. context. Only recently several European studies are conducted on how are HEIs responding to the challenges of the MOOC phenomena and are integrating it in their own strategic planning. They suggest that the response in Europe in some aspects differs from the U.S.

According to several U.S. and European studies (Allen & Seaman, 2015; Hollands & Tirthali, 2014; Yuan et al., 2014; Jansen et al., 2015), the predominant motivation for educational institutions to be involved in MOOCs is to increase institutional visibility and reputation. Typically, institutions that join one of the big MOOC platform providers view MOOCs as an opportunity to enhance their brand recognition and join an exclusive professional network.

These studies also have shown that a significant number of HEIs see MOOCs as an opportunity to experiment with innovative online pedagogical approaches (Allen & Seaman, 2015; Hollands & Tirthali, 2014).

In general, four clusters of objectives can be identified (Jansen et al., 2015):

1. Using MOOCs for financial reasons (e.g., reduce costs, generate additional income).
2. Using MOOCs for reputation/visibility reasons (e.g., student recruitment, marketing potential, reach new students).

3. Using MOOCs as an innovation area (e.g., improve quality of on-campus offerings, contribute to the transition to more flexible and online education, improve teaching).
4. Responding to the demands of learners and societies.

Most studies in the USA and Europe also agree that the objectives related to the financial (cost reduction, income generation) and scalability dimensions of MOOCs are not the most important objectives from the institutions' point of view.

European HEIs are much more interested to use MOOCs for innovation of the educational provision. This is confirmed when comparing the primary objectives of the HEIs for offering a MOOCs (Jansen & Goes, 2016). In Europe using MOOCs for student recruitment is not considered as important as in U.S., but rather to reach new students and creating flexible learning opportunities (for those new students).

#### Need for guidelines

There are no general guidelines and approaches for ascertaining how well a MOOC aligns with a given HEI's aims. Many of these institutions' aims for engaging with MOOCs are dependent on other factors, such as having good marketing, a reliable platform and staff who are ready to respond to learners' questions.

Research findings from developing countries (Warusavitarana, Dona, Piyathilake, Epitawela, & Edirisinghe, 2014) have highlighted that MOOCs are suitable for the development of HEIs in these countries, as they provide them with the opportunity to access the latest learning resources and most up-to-date developments in various subject areas. Academic staff indicated that the ability to take part in a new teaching approach has enabled them to rethink their course delivery and their engagement of students in collaborative learning environments. HEIs in the developing world should engage with MOOCs in order to build local capacity and enhance staff professional development.

#### **Design, delivery and uptake by smaller countries/universities**

Smaller countries and universities have to think carefully about why and whether they should design or open up courses to the world. Language is an important issue, and in some cases, it may be more important to focus on learning opportunities at the national or local level.

Another important factor to reduce costs is the co-development of MOOCs with other institutions. Examples exist of in-country collaboration. In addition, it may be possible to collaborate with knowledge institutions and civil society organisations in the development and uptake of MOOCs. Institutions can also reuse MOOCs. Three scenarios of such reuse in a formal setting are as follows.

*Scenario 1:* The students take a MOOC as part of a traditional course. Each week, the teacher organises a face-to-face meeting to discuss difficulties, add extra tasks, present local cases to supplement those in the MOOC and so forth. The final examination is prepared and graded by the teacher.

*Scenario 2:* The students take the MOOC independently from the institution. Two or three face-to-face meetings are organised to discuss problems. In the meantime, the students have to use the MOOC forum to solve problems they come across during studying. The final

examination is prepared and graded by the teacher.

*Scenario 3:* The students take the MOOC independently from the institution. They have to use the MOOC forum to solve problems they come across during studying. The student takes the final examination as offered by the MOOC, in a controlled environment.

It is clear that the amount of teacher effort is highest in scenario 1 and lowest in scenario 3.

When the learning materials of a MOOC are published under an open licence, they can be reused and adapted without reusing the complete MOOC. Hence, in many cases such resources are available outside the MOOC platform, so access to them is easier and is not dependent on the availability of a particular platform — for example, videos may in many cases be uploaded to an independent video-sharing website.

To conclude, reuse of high-quality teaching and learning resources for online delivery brings benefits to lower-income countries, as it has the potential to cut costs, increase access and improve the quality of education.

## The macro level drivers

### The nation brand of HE

In general MOOC provision is much more open to external scrutiny than is residential education, the quality of what a country's own universities offer in this area is important to the 'national brand' of its higher education system.

### Increase participation in tertiary education

Learning is in general recognised as an engine for individual, social and economic development. As such, it is highly advantageous for both individuals and society to invest in education. A high ratio of participation in tertiary education is especially beneficial for governments and society, since well-educated people present lower unemployment rates, live longer, have better health (less health costs for society) and are more satisfied with life in general. Provision of higher education is funded and partly (quality) controlled by national governments. But there are significant differences between higher educational systems. The continental European approach to higher education is related to state funding in which most institutions have equal resources and status while the more market-based U.S. model has mixed private-public funding and provision with large difference between HEIs. This social dimension seems to be very strong in continental Europe compared to the U.S. Investments of governments in higher education must also be related to the society level and consequently to aspects like access to HE, inclusion and social mobility. In this context the (society) costs of higher education is an important driver. Jansen, Schuwer, Teixeira, & Hakan Aydin (2015) state that this social dimension of higher education in continental Europe might be a possible explanation for the observation that HEIs are much more involved in MOOCs compared to U.S.

### Stimulate innovation for cost reduction and technology

MOOC are used to innovate higher education, not only at the learners level, but also the increase efficiency at the macro level. Open and online education in general (and MOOC specifically) is seen as a new and flexible way to educate the many while not increasing costs drastically (and even increase

quality of education while keeping total costs equal). Moreover, it might even reduce the total costs of higher education while maintaining (or even increase) the number of tertiary students.

Investments in education are made through technology-driven innovation, which is often made possible by constant reductions in costs (“Moore’s law”). ICTs can significantly reduce both variable and fixed costs. In some situations, the variable costs are minimal and the difference between serving a small or a large number of customers is thus negligible. This phenomenon has been called ‘variable cost minimisation’ (Kalman, 2014). ICTs have created the possibility of large-scale education by bringing courses to the public domain, as is the case with OERs (course content) and MOOCs (a complete learning experience). MOOCs have engendered discussion on blended and online education in European universities and in national ministries, e.g. in the Netherlands, Norway, France and the UK.

### Investments for increasing access to open education

Technology has not provided a solution that gives all people access to tertiary education. The problem of accessibility to HE is frequently addressed. The number of students enrolled in HE is forecast to rise from 99.4 million in 2000 to 414.2 million in 2030 — an increase of 314% (Calderon, 2012). This growth is being fuelled by the transformations that we are witnessing in the developing and emerging regions and countries of the world, and it will only accelerate in the next decades. Accommodating these additional students would require more than 4 major universities (30,000 students) to open every week for the next 15 years (Uvalić-Trumbić & Daniel, 2011). However, this raises problems as developing countries and emerging economies have a shortage of qualified teachers and a lack of high quality learning materials. The optimal solution would probably be to continue opening universities (both traditional and distance teaching), as well as to encourage universities to develop high quality MOOCs.

This question is further complicated by wide-ranging factors such as financial constraints, lack of capacity, national priorities and the digital divide, rendering the scope of this problem very hard to grasp. Options such as the construction of more university campuses, bolstering online learning and removing barriers to learning barely touch the surface of this massive challenge (Johnson et al., 2014, pp. 30-31).

MOOCs can contribute to goal number four of the UNESCO Sustainable Development Goals states: “Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all” (UNESCO, 2015a and 2015b). This framework refers to the role of technology in providing open educational resources (OERs) and distance education, and says that tertiary education should gradually be made free, in line with existing international agreements.

This requires active government involvement (e.g., UNESCO&COL, 2016), with investments that will also depend on the level of society and consequently on aspects such as access to HE, inclusion, equity, quality, affordability and social mobility. However, OERs only contain information and knowledge from higher education. They do not provide complete learning experiences in the way that informal courses do. For this, MOOCs are (or were originally) seen as the next step in the quest for greater access to higher education. However, at present MOOCs are not formally linked to higher education systems. To really provide access at the system level, learning through OERs and MOOCs must be incorporated into formal programmes.

## Producing MOOCS and other open, online courses

### Producing different kinds of MOOCs

This section starts with a basic overview of different approaches to learning and different pedagogical MOOC models. Subsequently, it describes different types of MOOCs and their consequences for the process of developing courses.

### Producing xMOOCs

An xMOOC focuses upon the transmission of knowledge didactically — i.e., it is fairly close to the classic pedagogical model used in lecture halls. The designer of the MOOC predefines the learning objectives and how knowledge acquisition will occur.

Design principles in general are:

- specially designed platform software
- video lectures
- computer-marked assignments
- peer assessment
- supporting materials
- a shared comment/discussion space
- no or very light discussion moderation
- badges or certificates
- learning analytics

In an xMOOC, learning materials are offered in small units that are easy to understand and process, usually 12–20 minutes long. Instead of readings, the main medium to transfer content and information is video. Other means are online tests, exercises and games. Short videos and exercises follow each other, so that students have to practice what they have learnt. In addition, forums and wiki pages are used to give participants a social learning experience. With a forum, scalability is reached in the sense that during the run of a MOOC, the workload of teaching staff barely increases even when a lot of participants have joined.

The developed video materials takes up different roles in the online context. This includes amongst others:

- Short trailer published about two-three months before the start date of the MOOC. Their goal is to trigger the students' attention by asking intriguing questions or posing a current problem. The trailer also summarizes briefly the content of the course.
- Short audiovisual presentation of all teachers and moderators involved in the MOOC. To strengthen personal relation participants can be asked to give a personal introduction through short video messages.
- Intro video stating what's coming the coming period and directs the learners' attention.
- The bulk of the video material are short videos in which a specific subject, topic or concept is explained. The most used format is this of a recorded lecture in combination with a voice-over or a talking head. Other formats are recording (or animation) of experiments, capturing

discussing between experts, storytelling, etc.

- Produced is of course audiovisual learning material (e.g., recorded lectures)
- Feedback through video to answer the most asked questions
- Outro videos summarize what has been done and gives a bridge to the next study period of the MOOC.

Central guideline is that those video have an average length of between 3-7 minutes and that basic multimedia principle are respected (e.g., Mayer, 2006).

Planning ahead is essential in this production process. In the pre-production phase, the video scenarios are written. These scripts should support the overall course, so the course design should be in place as well. The basic design rules of online education relating to the efficient choice of multimedia should be followed (Bates, 2015). In this context, experiments with low-cost video production are essential, especially to prioritise what kind of video will benefit most from professional production processes.

Overall, MOOC production is a team effort, like all other modes of distance, open and online education. Teacher, as topic experts, should be supported in writing good scenarios, camera training, screencasting, video production et

### Producing cMOOCs

A cMOOC is a connectivist MOOC. This approach highlights the networked nature of the learning experience. The knowledge is distributed and partly self-generated, and the coherence of the course as well as its progression are constructed by the learner. The participants can enrich the MOOC, and the community helps to construct and distribute the content. In this context, the iteration cycle of course design becomes more frequent and even decentralised, depending upon the level of granularity.

Design principles in general are

- autonomy of the learner: in terms of learners choosing what content or skills they wish to learn, learning is personal, and thus there being no formal curriculum
- diversity: in terms of the tools used, the range of participants and their knowledge levels, and varied content
- interactivity: in terms of co-operative learning, communication between participants, resulting in emergent knowledge
- open-ness: in terms of access, content, activities and assessment

A cMOOC has similarities with the open movement in that both rely on community input (e.g., open content, open source software). In a connectivist course, actions and activities are optional; what is important, after all, is not (only) the course content, but the discussions and interactions between all participants. cMOOCs provide great opportunities for non-traditional forms of teaching approaches and learner-centred pedagogy whereby students learn from one another (Dron & Anderson, 2014). Development efforts are mainly in collecting resources and creating a vast amount of support for social interactions, both synchronous and asynchronous, in the same place and in different places.

Several challenges for collaborative-style MOOCs from a general perspective (MoocGuide, 2014):

- Participants must create their own content. Also develop and strengthen the possibilities of interaction among participants
- Digital literacy is necessary
- Time and effort required from participants
- It is organic, which means the course will take on its own trajectory
- Participants must self-regulate and set their own goals
- Maintaining the quality standard already achieved by online education
- Support teachers, who should be the one that provides resources
- Develop alternative assessment methods that go beyond the traditional tests in virtual environments and collect quality aspect

### Producing sMOOCs

In Europe, different kinds of MOOC models are emerging. One example, relevant for this Guide, is the social-seamless MOOC (sMOOC; see Brouns et al., 2014). The sMOOC model offers a differentiated and more holistic approach than other MOOCs. sMOOCs are designed to accommodate a wide spectrum of approaches and contexts, taking into account a variety of languages, cultures, settings, pedagogies and technologies. Consequently, the traditional pillars of open education theory are mixed with elements from socio-constructivism, gamification, ubiquitous learning and digital inclusion.

The following elements make up the sMOOC model:

- Besides the designed weekly activities/tasks, “challenges” are available. The general challenges are accessible in a centralised bank but may be localised and personalised.
- Participants receive “badges” when they complete special learning challenges.
- Contents and objectives are mostly structured under a story-like narrative.
- The sMOOC facilitates the construction of collaborative knowledge communities.
- Achievements encourage interactivity and engagement in the course.
- Social networking and Web 2.0 tools are incorporated to integrate the personal and professional experiences of participants. Participants have a personal page with access to the (learning) analytics for various courses.
- Digital literacy resources are integrated into the MOOCs and shared through different social networks.
- The professionals involved are trained in working with the various groups affected by the digital divide.

Presently, the sMOOC model uses a collaborative-decentralised scenario — i.e., each institution or hub-partner has its own MOOC platform, and each sMOOC is by definition multilingual (providing access in different languages) and offers the possibility of contextualised learning through mobile technologies and gamification.

### Producing self-paced MOOCs

A collective of different EU-MOOC initiatives defined “MOOCs as courses designed for large numbers of participants, that can be accessed by anyone anywhere as long as they have an internet connection, are open to everyone without entry qualifications, and offer a full/complete course experience online for free” (Brouns et al., 2014). This definition was validated amongst European institutions (Jansen, Schuwer, Teixeira & Aydin, 2015).

In addition several criteria were developed to characterise the different elements as part of this definition (see explanation at [OpenupEd](#)). Related to the Openness as in freedom of place, pace and time it was already stated that a fixed starting and end date and a fixed pace are not criteria to be imposed on courses to define them as MOOCs. The criteria preferred is that it must be a complete/full course experience including (non formal) recognition option. I.e. the course should have a start and end date but that these dates doesn't have to be set beforehand be the MOOC provider / higher educational institution. As such MOOCs may have fixed dates or not, depending on the institution's choice for a particular course.

Mulder and Jansen (2015) examined the different general dimensions that are important for MOOCs to be instrumental to open up education. They state that the pedagogical approach is very essential such that learners/participants are facilitated with appropriate incentives to make progress and to succeed in their learning efforts. Pedagogical models must include for example a learner centered approach, i.e. it is the learner who is put central. In those pedagogical models the learner decides what to learn, when, how and what pace.

### Pros and cons of self-paced MOOCs

[Classroom Central](#) declared 2015 as the year of self-paced MOOCs. More and more MOOC providers are offering self-paced MOOCs and Class Central reported more than 800 self-paced courses (20% of all MOOCs on Class Central),

The most used argument for self-paced MOOCs are related to the freedom of time and pace for participants. Mulder & Jansen (2015) examine whether MOOCs can be instrumental in opening up education. Their main conclusion is that MOOCs cannot remove all barriers to learning. However, self-paced MOOCs might overcome the barrier of scheduling if participants can start any time and can choose their own scheme. This flexibility might increase the success rate as MOOC participants can be plan their study more flexible according to their needs. Another hand it is known that some people need deadlines to work with and to complete the whole course and as such too much flexibility in end date might increase dropout rates. An argument used against self-paced MOOCs is that community and forum activities are not that synchronised anymore and as such makes it harder to get help and discuss tasks and content. However, this seems more a design issue then a real obstacle especially in courses with mass participation (like MOOCs).

### **Are self-paced MOOCs compatible with social dimension?**

In principle self-paced MOOCs are very compatible with the social dimension of cMOOCs or sMOOC. Firstly as embracing the social dimension the freedom to start and finish anytime favours the personal and regional conditions and schedule for study. Secondly, the non-formal and informal networked learning and social learning have a place. For example online learning communities in which people come, take what they want and go, but still have an active community. This kind of social interaction and collective knowledge construction is done asynchronously with participants in different phases of expertise and with different backgrounds. Moreover, this strengthens the inter-creativity and interculturality.

However, the effectiveness of self-paced MOOCs are strongly related to the design and to make use of the massive dimension of MOOCs. Indeed regular courses with limited students have troubles in creating communities if courses are self-paced. But in MOOCs we have many-many participants and community building can be organised very effectively in self-paced MOOCs.

### **Designing self-paced MOOCs**

The main challenges in designing self-paced MOOCs are related to both pedagogical and logistic aspects. And both can be interrelated for efficiency reasons. For example assignments might be personalised to the needs of a participant and/or targeted in re-using the work of a person already completed the course. This enhances the collective knowledge building of the community related to the MOOC. As such the assignments and tasks are only repetitive on a general level. The details of content to be used might differ (like in problem and project based education). As such a design of self-paced MOOCs can strongly differ from xMOOCs where all participants are asked to do exactly the same. This also counteracts the potential flaws of self-paced MOOCs with less interaction and less deadline.

Moreover, another design aspect can be related to setting these deadlines for the participants themselves. I.e. whenever a MOOC participant starts with the MOOC, (s)he is asked to compose a personal planning document related to the overall structure/assignments of the course. In addition one could ask to elaborate on this, choose a specific topic related to the course, making use of existing knowledge in the community and as such construct a planning document of the different tasks to do. This planning document can be reviewed by another MOOC participants just starting or even almost finishing. I.e. reviewing each other's works in different stages of course progress can be made mandatory for such a (personal) planning document.

This could be extended to group work as well. One might ask participants to form cohorts clustered by same starting date and same pace. This can be more easily done with massive participation and can even be regionalised / clustered to same native language groups (or contrary to stimulate interculturality). As such the course logistics can become imbricated, groups of participants just starting will meet other groups, and interaction in an overlapping manner occurs. As such one group already almost finishing the course could be asked to review initial work of a group just starting. And constructive knowledge building can be part of such group work as well.

Ideally the learning has to be organised bottom-up and this requires a well thought out design of both pedagogics and logistics. Moreover learners can (partly) be involved in this design process and for

example also take on the role of co-producers and even as coach. This increases their responsibilities to the continuous activities of the MOOC and related communities.

### **Instructional design for MOOCs at DCU/NIDL**

The National Institute for Digital Learning in Ireland has been developing MOOC instructional design modules that have strategic alignment with organizational goals whilst simultaneously being attuned to the authentic experiences of the individual learner. The instructional design modules being developed under SCORE2020 were underpinned by participatory workshops aimed at increasing capacity for local open learning expertise in the region including the two successful multiplier events on learning design.

#### **Workshop 1: May 5th 2016 Making MOOCs - Designing for Autonomous and Collaborative Online Learning**

This workshop was based on the Learning Design Studio methodology and drew on the outputs of the SCORE2020 project and MOOC design patterns to lead participants through a collaborative process of design inquiry of learning. In this process, participants refined their understanding of target learners and their learning contexts, identified specific educational challenges within these contexts, reviewed relevant knowledge and existing solutions to similar challenges, and conceptualised and validated solutions.

It had the following aims:

- Identify your learners' needs, assets and constraints;
- Articulate the aims and objectives of the course for you and for your learners.
- Consider the appropriate pedagogical approaches, the effective educational practices, and the suitable technologies to support them – for achieving the aims you defined in the situation you described, with an emphasis on autonomous and collaborative learning;
- Storyboard a high-level design for your course, along with models of activity flows and specific exemplar activities;
- Validate your design through guided self and peer review.
- Develop tools and methods for evaluating the success of your course and learning innovation.

It was facilitated by Dr. Yishay Mor, an international expert in learning design.

#### **Workshop 2: 2nd November 2016 - Workshop on Learning Design for MOOCs and Open Education**

This half-day SCORE2020 workshop at Dublin City University (DCU) explored some of the challenges of learning design in the era of MOOCs and Open Education. As part of the SCORE2020 project the workshop introduces participants to a number of design tools and techniques for purposeful planning and course design following the principles of open education. More specifically, the workshop sought to anchor the creative and iterative design process around the 7C Framework for learning design. It had the following aims:

- to help participants better understand the complexity of learning design in an open world
- to help participants more seamlessly integrate activities and resources for open education

- to help participants plan, design and develop their own courses using more contemporary open education models of learning design

The Workshop was facilitated by Dr Grainne Conole, a leading expert in learning design and open education.

As per the description of Output 5 of the SCORE2020 project MOOCs can have many learners of varying profiles but can also have specific target cohorts based on the subject of the course and their motivations for taking the course. Each of the workshops above helped directly in conceptualizing these cohorts and in hence informing the design conversations that fed the development of specific MOOCs. Two examples or vignettes are given in overview below. The vignettes server as jumping off points, containing as they do references to full articles which provide case studies for stakeholders who wish to delve further.

The most relevant examples of our instructional design and pedagogical approach comprise firstly the Headstart Online MOOC on learner readiness and secondly the under-development Irish 101 MOOC for new learners of the Irish language.

**Case 1: Design of “HeadStart Online” – MOOCs for New Flexible Learners**

This MOOC was a five week pre-induction socialisation MOOC designed to facilitate successful transition into Higher Education for flexible learners. In this context a broad definition is adopted of flexible learners, which includes adult learners engaged in part-time and/or online/distance education. A number of national and international reports have emphasised the importance of bringing more adult learners into higher education. Adult learners have a preference for flexible programmes of study that allow them to fit study around the existing parts of their life. However, enhancing retention and completion rates of this group of flexible learners has become a significant problem throughout the world, especially with the growth of new models of online learning.

The MOOC targets prospective flexible learners during early parts of the study life-cycle, when they are considering entry into higher education, or have just made that decision and may benefit from advice about how to effectively prepare. The MOOC utilises a number of the open educational resources developed by the Student Success Toolbox project and combines these digital readiness tools with supporting materials in order to deliver a comprehensive pre-induction socialisation course.

A course ran from the 15th Aug to the 19th Sept. The feedback received indicates that a course such as this, that uses the open educational resources developed by the students’ success toolbox project, can have a positive impact on prospective flexible learners.

*Table 1: The Main Learning Design and Pedagogical Approaches Used:*

Approach	Key Reading
Design based research	The Design-Based Research Collective. (2003). Design-based research: An emerging paradigm for educational inquiry. <i>Educational Researcher</i> , 5-8. Available from: <a href="http://www.jstor.org/stable/3699927?seq=1#page_scan_tab_contents">http://www.jstor.org/stable/3699927?seq=1#page_scan_tab_contents</a>

Open Educational Resources	Brunton, J, Brown M., Cleary A, Costello E, Delaney L, Fox S, Galvin C, Gilligan J, O'Regan L, Ward J (2016). Lost in Transition: A Report on Enabling Success for Flexible Learners. Dublin: Dublin City University. Available from: <a href="http://studentsuccess.ie/wp-content/uploads/2016/06/STUDENT_SUCCESS_TOOLBOX-LOST_IN_TRANSITION_REPORT.pdf">http://studentsuccess.ie/wp-content/uploads/2016/06/STUDENT_SUCCESS_TOOLBOX-LOST_IN_TRANSITION_REPORT.pdf</a> .
Learner Personas	Mor, Y. (2013), <a href="#">SNaP! Re-using, sharing and communicating designs and design knowledge using Scenarios, Narratives and Patterns</a> , in Rosemary Luckin; Peter Goodyear; Barbara Grabowski; Sadhana Puntambekar; Niall Winters & Joshua Underwood, ed., 'Handbook of Design in Educational Technology', Routledge, , pp. 189–200

### Further Reading:

Brown, M., Brunton, J., Costello, E., Delaney, L., & Fox, S. (2016). [Making better choices: Self-regulative tools for flexible learner success](#). In Proceedings of [Global Learn 2016](#) (pp. 502-506). Association for the Advancement of Computing in Education (AACE). Limerick, Ireland, 28th April.

Brunton, J., Brown, M., Cleary, A., Costello, E., Delaney, L., Fox, S., Gilligan, J., O'Regan, L., & Ward, J. (2016). Developing a suite of flexible learner transition tools: The student success toolbox project. In Remenyi, D. (Ed.). [e-Learning excellence awards: An anthology of case studies 2016](#). Reading, UK: Academic Publishing International.

### **Case 2: Design of Irish 101 - Language Learning and MOOCs**

The development and delivery of the IRISH 101 LMOOC is associated with the Irish government's centennial commemoration of the historical events which led to the establishment of the Irish State. Irish 101 is aimed at the global Irish diaspora, and particularly those who claim Irish heritage – for example in the United States this population is estimated to be nine times the current population of Ireland of 4.5 million people. The LMOOC, however, is also being developed by Dublin City University as part of a wider strategic aim to deliver an online Irish language higher education degree programme. The LMOOC will be used to test, to pilot and to research specific areas of language learning, particularly those aimed at oral language production and interaction and also to conduct sentiment analysis within the LMOOC. The project is led by academic staff from FIONTAR, an Irish-medium interdisciplinary School and the National Institute of Digital Learning in Dublin City University and will be the first Irish LMOOC delivered using an approach to language learning based on action-oriented approaches to language learning (Blin,2010). This notion incorporates Linell's (2009) view on language learning as languaging or language in action, referring to the complexity of linguistic actions in thinking and in communicating. Furthermore, learner agency is viewed as a critical component of an action-oriented approach to language learning. A critical element in the development of the IRISH 101 LMOOC has been the design and re-design phase using a user-centred design model. As part of this approach the development team have completed usability studies with cohorts of potential participants as part of research conducting as part of the Fulbright programme in the United States. By adopting this approach the development team have been able to test the pedagogical approach of the LMOOC and to complete technical testing as well, with significant input from end users – the language

learners.

*Table 2: The Main Learning Design and Pedagogical Approaches Used:*

Approach	Key Reading
Design for collaboration, communication, reflection and autonomy	Conole, G. (2014). "A new classification schema for MOOCs." <i>INNOQUAL-International Journal for Innovation and Quality in Learning</i> , 2(5). <a href="http://empower.eadtu.eu/images/fields-of-expertise/OERsMOOCs/INNOQUAL-Issue-3-Publication-Sep-2014-FINAL-w-cover.pdf">http://empower.eadtu.eu/images/fields-of-expertise/OERsMOOCs/INNOQUAL-Issue-3-Publication-Sep-2014-FINAL-w-cover.pdf</a>
language in action	Linell, P. (2009), <i>Rethinking Language, Mind, and World dialogically: Interactional and Contextual Theories of Human Sense-Making</i> , Information Age Publishing Charlotte: NC, 482.
language situated in sociocultural contexts	Blin, F., Julkanen, J., Taalas, P., Nic Giolla Mhichíl, M. & Ó Ciardubháin, C. (2012), "Sustainability Framework", available at: <a href="http://www.speakapps.eu/files/2011/12/wp5_d12-13_towardssustainability.pdf">http://www.speakapps.eu/files/2011/12/wp5_d12-13_towardssustainability.pdf</a>

#### **Further Readings:**

Bárcena, E. and E. Martín-Monje. (2014). Language MOOCs: an Emerging Field. *Language MOOCs: Providing Learning, Transcending Boundaries*. E. Bárcena and E. Martín-Monje, DE GRUYTER OPEN. <https://www.degruyter.com/viewbooktoc/product/455678>

Blin, F. (2010). Designing Cybertasks for Learner Autonomy: Towards an Activity Theoretical Pedagogical Model. In M. J. Luzón, M. N. Ruiz-Madrid & M. L. Villanueva (Eds.), *Digital Genres, New Literacies, and Autonomy in Language Learning* (pp. 175-196). Newcastle Upon Tyne: Cambridge Scholars Publishing.

Council of Europe. (2001). *Common European Framework of Reference for Languages: Learning, teaching, assessment*. Cambridge: Cambridge University Press.

Linell, P. (2009), *Rethinking Language, Mind, and World dialogically: Interactional and Contextual Theories of Human Sense-Making*, Information Age Publishing Charlotte: NC, 482.

Sokolik, M. (2014). What Constitutes an Effective Language MOOC? *Language MOOCs: Providing Learning Transcending Boundaries*. E. Martín-Monje and E. Bárcena, DeGruyter Open: 16-32. <https://www.degruyter.com/viewbooktoc/product/455678>

### Creating online and open courses

Another model under development is the creating of open and online layers around an existing formal course. Band et al. (2016) proposes the opening up of the course activities within the course forms in OOC track. In the regular course, students produce content in the form of blog posts, figures, videos, etc. These products form the basis of subsequent discussions. All student products and discussions will be publicly available with the intention of providing relevant content and discussions for others to read. Some participants will be answering assignments and producing content, which would be the typical completing participant. Others will perhaps only make comments and participate in discussions surrounding the produced content, for instance auditing participants. The aim is to connect different kind of (formal and informal) learners and in addition provide educational services to those not able to attend regular on-campus courses. As such going back to the original goal of open education and not designing the open online course for massive audience at the start.

## French guidelines for learning design models for OER, MOOCs, SPOCs

Resource Name	Le guide de la formation à distance
Authors	<p>Gérard-Michel Cochard, Université de Picardie Jules Verne et Cnam, animateur du groupe de travail, (thèmes 1, 3, 4, 5, 6, 8 et supervision) gerard-michel.cochard@cnam.fr , gerard-michel.cochard@u-picardie.fr</p> <p>Fabrice Bouquet, Université de Franche-Comté, (thème 9)fabrice.bouquet@univ-fcomte.fr</p> <p>Sonia Guedon, Université du Maine, (thème 7) sonia.guedon@univ-lemans.fr</p> <p>Jean-Luc Guérin, Université de Picardie Jules Verne, (thème 8) jean-luc.guerin@u-picardie.fr</p> <p>Catherine Lelardeux, Université Jean-François Champollion, (thème 5) catherine.leardeux@univ-jfc.fr</p> <p>Jean-Marc Meunier, Université de Paris 8, (thème 2) jean-marc.meunier@univ-paris8.fr</p> <p>Nicolas Postec, Université du Maine, (thèmes 7 et 10) nicolas.postec@univ-lemans.fr</p> <p>Celia Ukkola, Université de Bordeaux 3, (thème 10) celia.ukkola@u-bordeaux3.fr</p>
Article Purpose	<p>Ce guide, qui peut être téléchargé à l'URL ci-dessous, est le fruit d'un travail collectif d'acteurs engagés dans la formation à distance dans l'enseignement supérieur français. Il présente différentes facettes de la formation à distance universitaire dans leur variété mais aussi dans leur complexité. Il répond à plusieurs objectifs dont le principal est de sensibiliser les responsables universitaires à l'enjeu que représente la formation en ligne pour des apprenants distants mais en mettant en évidence les contraintes nécessaires à des prestations formatives de qualité. Le guide a été rédigé par des collègues universitaires dont les visions et les préoccupations ne sont pas nécessairement les mêmes. Il n'y a pas, en effet, de modèle unique de la formation à distance mais des modèles variés répondant aux nécessités des publics cibles, des disciplines enseignées, des contraintes internes aux établissements.</p>
URL	<a href="http://ffoad.fied.fr/information/guide.pdf">http://ffoad.fied.fr/information/guide.pdf</a>
Topics Covered	<p>Thème 1 : Découverte de la formation à distance</p> <p>Thème 2 : Spécificité de la formation à distance</p> <p>Thème 3 : Standards du e-learning</p> <p>Thème 4 : Plateformes d'e-formation</p> <p>Thème 5 : Ressources numériques, conception et réalisation</p> <p>Thème 6 : Accompagnement et suivi à distance</p> <p>Thème 7 : Aspects légaux et bonnes pratiques</p> <p>Thème 8 : Formation à distance à l'international</p> <p>Thème 9 : Le service pédagogique à distance et sa quantification</p> <p>Thème 10 : Conduite d'un projet de formation à distance</p>
Stakeholders	Responsables universitaires

Resource Name	Guide d'accessibilité des ressources numériques
Authors	Université Ouverte des Humanités
Article Purpose	L'objectif du projet CAPA consiste à répondre aux problématiques sociétales et légales d'accessibilité de contenus pédagogiques par la mise à disposition d'outils de production open-source au service d'une communauté d'acteurs sensibilisés et formés et la création d'une dynamique de collaboration entre les différents acteurs concernés ( services handicap, TICE, audiovisuels, DSI, enseignants, associations...).
URL	<a href="http://www.uoh.fr/front/sujet?id=17e86d2f-431b-4fc5-8b13-9c21759baddc">http://www.uoh.fr/front/sujet?id=17e86d2f-431b-4fc5-8b13-9c21759baddc</a>
Topics Covered	Le premier "Module de sensibilisation: Exemples et contre exemples d'accessibilité des documents numériques" est un ensemble de ressources de sensibilisation avec des exemples (enregistrement aux lecteurs d'écran, simulation...) Le deuxième "Module auteur : Bonnes pratiques pour l'accessibilité des documents numériques" est à destination des auteurs de contenus avec un ensemble de bonnes pratiques et de conseils de rédaction.
Stakeholders	Spécialistes des TICE & auteurs

Resource Name	Guide des auteurs de ressources numériques
Authors	Université Ouverte des Humanités
Article Purpose	Ce guide présente les différentes étapes clefs de la conception d'une ressource pédagogique numérique destinée à un usage mutualisé (au sein d'une Université Numérique Thématique par exemple) ou à des fins de diffusion plus large (publication sur un site web).
URL	<a href="http://www.uoh.fr/front/documents/pdf/guide_auteur_inter_UNT.pdf">http://www.uoh.fr/front/documents/pdf/guide_auteur_inter_UNT.pdf</a>
Topics Covered	Importance du design pédagogique Aide à la création de cours Aide à la création d'exercices Aide à la rédaction d'activités
Stakeholders	Spécialistes des TICE & auteurs

Resource Name	Comment aller au-delà de la capitation de cours : Guide juridique
Authors	Gérard Casanova, Yacine Abboud & Joy Peynet
Article Purpose	Ce guide pratique a pour objectif d'aider les utilisateurs (professeurs et étudiants) et les institutions à comprendre les aspects juridiques entourant les cours filmés.
URL	<a href="http://www.uoh.fr/front/documents/pdf/comment_aller_au-dela_de_la_capitation_de_cours_guide_juridique.pdf">http://www.uoh.fr/front/documents/pdf/comment_aller_au-dela_de_la_capitation_de_cours_guide_juridique.pdf</a>
Topics Covered	Aspects juridiques entourant les cours filmés.
Stakeholders	Spécialistes des TICE & auteurs

Resource Name	Pérennité et interopérabilité des documents
Authors	Inter UNT – Groupe cycle de production
Article Purpose	Ce document a pour objectif de présenter des caractéristiques, conseils et exemples relatifs à la production de documents pour qu'il puisse en ressortir des bonnes pratiques favorisant la pérennité et de l'interopérabilité des contenus pédagogiques.
URL	<a href="http://univ-numerique.fr/wp-content/uploads/2014/07/P%C3%A9rennit%C3%A9-et-interop%C3%A9rabilit%C3%A9-des-documents.pdf">http://univ-numerique.fr/wp-content/uploads/2014/07/P%C3%A9rennit%C3%A9-et-interop%C3%A9rabilit%C3%A9-des-documents.pdf</a>
Topics Covered	Production de documents sous l'angle d'un format informatique et sous l'angle d'un contenu pédagogique
Stakeholders	Spécialistes des TICE & auteurs

Resource Name	Enseigner et former dans le supérieur
Authors	Ecole Normale Supérieure de Cachan
Article Purpose	L'objectif de ce MOOC est d'aider à comprendre pourquoi et comment transformer les formations dans l'enseignement supérieur, tant dans leur organisation que leur mise en œuvre, au regard des évolutions profondes qu'il subit depuis plusieurs années.
URL	<a href="https://www.fun-mooc.fr/courses/ENSCachan/20012/session01/about">https://www.fun-mooc.fr/courses/ENSCachan/20012/session01/about</a>
Topics Covered	Les grands enjeux actuels de l'évolution de l'enseignement supérieur : processus de Bologne, les caractéristiques des nouveaux publics... Les recherches sur les formations supérieures : quelles sont leurs problématiques, comment elles les abordent, quels résultats ? Les grandes questions professionnelles sur la formation : la motivation de l'étudiant, quels leviers possibles, sur lesquels peut-on agir ? Les formes et modalités d'évaluation ? ... Mais aussi des débats, puisque le MOOC est un lieu de présentations et d'échanges.
Stakeholders	Responsables universitaires & enseignants

Resource Name	Accessibilité numérique
Authors	Institut national de Recherche en Informatique et en Automatique (INRIA)
Article Purpose	Introduction à l'accessibilité numérique
URL	<a href="https://www.fun-mooc.fr/courses/inria/41012/session01/about">https://www.fun-mooc.fr/courses/inria/41012/session01/about</a>
Topics Covered	Sensibiliser aux situations de handicap Décrire la problématique de l'accessibilité numérique Exposer les principaux mécanismes généraux mis en œuvre pour favoriser l'accessibilité numérique, Présenter plusieurs solutions techniques existantes (systèmes d'exploitation, logiciels, documents numériques...), présenter les concepts fondamentaux à respecter pour concevoir et développer de nouveaux systèmes numériques accessibles.
Stakeholders	Responsables universitaires & enseignants ; concepteurs d'interface et de logiciels

Resource Name	Monter un MOOC de A à Z
Authors	Matthieu Cisel, Audrey Ego, Remi Sharrock, Nelly Violette
Article Purpose	Appréhender les principaux aspects de la conception d'un MOOC : de la propriété intellectuelle à l'ingénierie pédagogique en passant par la gestion de projet
URL	<a href="https://www.fun-mooc.fr/courses/inria/41012/session01/about">https://www.fun-mooc.fr/courses/inria/41012/session01/about</a>
Topics Covered	Comprendre la diversité des formats de MOOC Appréhender les principaux problèmes de propriété intellectuelle Scénariser un cours dans son ensemble et concevoir des activités adaptées Savoir concevoir des vidéos pédagogiques Pouvoir animer et piloter un MOOC Faire l'analyse et le bilan du projet
Stakeholders	Responsables universitaires & enseignants ; spécialistes TICE

Resource Name	Guide du MOOC
Authors	Matthieu Cisel
Article Purpose	Scénarisation et réalisation d'un MOOC
URL	<a href="http://media.sup-numerique.gouv.fr/file/MOOCs/87/0/guide_mooc_complet_vf_471870.pdf">http://media.sup-numerique.gouv.fr/file/MOOCs/87/0/guide_mooc_complet_vf_471870.pdf</a>
Topics Covered	Conception des ressources, scénarisation des activités et animation d'un MOOC
Stakeholders	Responsables universitaires & enseignants ; spécialistes TICE

Resource Name	Dossier d'information MOOC
Authors	Aurélié Gono
Article Purpose	Dossier d'information sur le phénomène des MOOC
URL	<a href="http://inshea.fr/sites/default/files/Dossier%20info%20MOOC.pdf">http://inshea.fr/sites/default/files/Dossier%20info%20MOOC.pdf</a>
Topics Covered	Définition, typologie, avantages et inconvénient des MOOC
Stakeholders	Responsables universitaires & enseignants ; spécialistes TICE

## Design of an online Course at Università telematica Internazionale UNINETTUNO

### Introduction

The cornerstones of the UNINETTUNO e-learning model are as follows:

- centrality of the student;
- transition from transmission of knowledge to building of knowledge;
- integration between theory and practice;
- transition from a passive and competitive learning to an active and collaborative learning.

The didactic tool on which the UNINETTUNO model is based is the [Didactic Cyberspace](#), a learning environment in Internet, where the training is provided in 5 languages (Italian, English, French, Arabic, Greek). Inside this portal, a guided journey leads the student to the different virtual places where the training activities based on a specific method of communication are delivered.

The UNINETTUNO e-learning model is a complex model, where the videolessons are indexed and enriched with a number of bookmarked “learning objects”, the learning process further supported and complemented by the additional tools offered in the learning environments included in the didactic cyberspace:

- **videoteque** where the videolessons and slides of each module are located. **The videolessons** use a linear learning model, still related to a traditional view of teaching, but thanks to the connections with different types of didactic materials (books, articles, websites, exercises, etc.), the student uses a hypertext approach to study;
- **digital library** that contains books, articles, bibliographies and web resources;
- **virtual labs** host exercises related to the videolessons. Thanks to these, the students control and increase their knowledge according to the “learning by doing” model, while being assisted through a tutoring system;
- **Tutoring on-line interaction tools: chats, forums, virtual classrooms and discussions in Internet** allow students to share the phases of their educational process not only with a tutor, but also with other students coming from different linguistic, cultural, social environments;
- **area for the statistical evaluation** of the students’ and tutors’ activity.

The UNINETTUNO model is based on three teaching categories:

a) - the Area Professor, responsible for

- Coordinating the Teacher – Author of contents and the Tutors,
- Designing the Module contents;
- Drafting a “Course Programme” document, based on a standard format and including the following information: objectives, contents, books and reading materials, prerequisites, exercises, titles of all lessons;

b) The Teacher – Author of contents (videoprofessor)

- Recording and review of the videolessons;
- Drafting of supporting graphic materials to be included in the videolessons (text, slides);

c) The Tutor, facilitating each student’s learning process through online tools.

### Course structure and didactic materials

The starting point for each module is the “**Conceptual Map**”: a graphical, multimedia and hypertext representation of all the macro-topics that are part of the module and all of the videolessons related to these topics. The map is useful for students to have a comprehensive view, and helps them to plan their own learning process, in a hypertext and multimedia way.

All the teaching and supporting activities have to be planned according to the Conceptual Map, so that a study path includes periods of studying, reflection and discussion for each macro-area. The number of activities can be fine tuned to better fit the student’s needs or a particularly difficult subject.

The **videolessons** are a central element from which all the other activities related to the learning processes are started. Recorded by the professors coming from the best Italian and foreign universities, the videolessons are then digitized and published online in an interface that allows students to use them as hypermedia. The student can watch the videolessons in a linear manner or choose instead to control the teaching process at her/his pleasure, pausing, going back and moving along the time span of the lesson. In fact, thanks to a series of commands that appear on the screen, the student may watch some parts of the videolesson as many times as she/he wants; can pause and try to do exercises related to the videolesson; can browse among the videolessons or within a single videolesson; can browse on the Internet to integrate the topic with some additional information.

By using indexing, which allows students to select a specific sub-topic discussed by the video professor during the lesson, the student can also move the video to that particular moment when the professor begins to speak about a specific topic. In addition, in some specific moments, a bookmark (see the figure at right) - a light signal that inscribes one of the category of study material available in the box at right - indicates to the student that a specific material associated to what the teacher is saying at that precise moment of the videolesson is available for an in-depth study.

In this way, the learning process becomes hypermedia: the student accesses the content recommended in real-time by the bookmarks that allow them to access in real-time to books, articles, papers, notes, essays, multimedia material, photo galleries, and video clips related to the videolessons, bibliographies and web- resources, as well as to exercises and virtual laboratories.

In the **digital library**, students can access all didactic materials placed in cyberspace and have the possibility to see a set of documents in different languages that would have hardly found in actual libraries. The viewing of the documents can be done in a simple way (the system offers a series of bibliographic references related to a topic chosen), or through intelligent interrogation (the system provides dynamic bibliographic information relevant to the user's requests). In this second case, students accesses to an Intelligent Library System (ILS) which allows them to "travel" in all directions that a virtual library offers. Students can search by keyword, topic or author; view and zoom texts and images; copy, save, and print some parts that can be interesting for them; propose new contributions. In this section, the presence of the professor is less obvious but no less important: she/he, in fact, has to co-ordinate the links between the various didactic materials in the virtual library, making the navigation of the student not random, but integrated into a very well defined didactic project.

In the **virtual labs**, students have at their disposal the materials that will enable them to put into practice the knowledge achieved through the study of the videolessons. More solid and lasting learning is that achieved by "doing", rather than obtained mechanically: because of this, the virtual labs are designed to combine the theoretical learning with the practical solution of problems.

At any time, the student can perform the exercises contained in the virtual lab. Exercises are an integral part of videolessons that allow students to "put into practice" the concepts explained by the professor.

The **self-check exercises** allow the student to have an autonomous feedback, lesson to lesson, about the level of understanding gained about the topics studied during a specific lesson; the **verification exercises** have to be delivered to the professor-tutor through the e-learning portal, and then assessed by the professorss who will provide a judgement on the level of learning achieved by the student.

The "**tutoring online**" section represents an interactive arm of the UNINETTUNO's portal. The student is never left alone during her/his studies online, but is followed step-by-step by a professor-tutor. To promote this continuous exchange among the actors of the learning process, ad hoc tools such as chat, forum and virtual classroom have been created.

The **chat session** allows a direct interaction between students and professor-tutor. It is a periodic meeting in chat where students can ask questions on specific topics of the course, as well as propose topics to discuss in depth with other students attending the chat. Each chat session has a title that represents the topic of discussion. The content of the chat sessions is saved and posted on the forum section related to the course. In this way students, who were not be able to attend a chat session, can find all the information about the problems that have emerged during the chat.

The **forum** is another space of interaction between professors and students. It is organised by thematic areas where students and tutors can publish messages related to the didactic content of the various disciplines. The tutor has a function of the moderator who leads discussions, intervenes in times of difficulty, and proposes topics to discuss.

The **virtual classroom** is another tool available on the UNINETTUNO's e-learning platform. This tool puts in a direct relation students and professors. The tutor records her/his video speech and uploads it on the web platform of UNINETTUNO. The student can follow the virtual classroom in live broadcast through her/his PC, tablet or smartphone, intervene or ask questions in chat. Those who do not attend the live virtual classroom, will be able to find it uploaded and ready to be watched on the UNINETTUNO's e-learning platform a few hours later.

The virtual classroom allows students discuss in real time some important aspects, deepen specific topics and key elements of the course. The virtual classroom sessions are often scheduled upon request of students who want to clarify doubts or deepen specific topics.

### **Videoleasons design and production**

#### The basis: video-didactic communication model

In face-to-face teaching, where the learner and the teacher are both present and can interact, the kind of communication that is enacted is of a two-way kind, whereas, in distance teaching the learner and the teacher are not present in the same place and the kind of communication that takes place is one-way. advantage of being pre-planned, without repetitions, more structured and logical, more objective and concise, of a richer and more suitable vocabulary, more explicit and richer in information.

Essentially, the written text allows thinking over its content thanks to its permanent nature. However, in "face-to-face" conversation meaning is enhanced by gestures, posture, intonation of the voice, mimic and facial expression that give additional information, little of which can be present in written communication. If a series of additional information is lost in the written text, it has the advantage that its visual mode results in the externalisation and objectivisation of the content of the communication, which allows the author to make his/her authority on the subject better known.

The video teacher, unlike the author of a text, who can use only written language, has also the possibility to make use of some of the advantages of oral language and of the visual language, which in addition to those of written and graphical language gives particular effectiveness to communication. For didactic communication with the use of video to play its role in teaching, it must be extremely rigorously and logically structured.

Therefore, the communication models implemented in the videolesson differ substantially from the typical models of television communication that are usually based on dialogue, producing and activating particular emotional states in the viewer.

The videolesson should appear as a guided didactic conversation; the specificity of the communication medium makes the teacher: "beside transmitting knowledge on a given subject, guides the student towards a learning-effective method of study, and encourage a critical reading of the textbooks; that is

why it is essentially linked to the traditional didactic methodology, even if it takes into account the fact that it uses television as communication medium”.

More specifically, we adopted the cognitive and connectionist theories describing mental activity as composed of the succession of three different phases: the acknowledgement of information, its transformation and processing and at last its storage into long-term memory.

In realising the videolessons and in order to promote the first three phases of the learning process in particular, are adopted some techniques “in order to trigger learning”.

### Graphic support to videolessons

Slides can be considered as a useful aid to communication cognitive processes. An appropriate use of a graphical presentation helps the students since it acts as an external memory. Nevertheless, it is also possible to make an inappropriate use of the graphical material: often, actually, slides include the presentation and reading of long and complicated texts and key words that are unclear and not concise that are not useful to summarise and pinpoint basic concepts and that is the reason why it becomes difficult to access information and process its further.

Therefore, it is necessary to find the representation that best suits each task that is to say to use an appropriate format of each task that helps the student to access to the information and makes its further processing easier. It could be useful to remind also that there is not a single correct way of presenting information, since the “appropriateness” of the representation depends on the task and on the aim that you set. Any one of the formats can be the optimal one for all objectives.

The production of slides accompanying a video lesson should:

1. Use a number of slides proportional to the duration of the lesson (i.e. 20 slides for a 40-45 min lesson)
2. Use a layout with appropriate background, as color, intensity, contrast, text size influence the overall readability. Some colours in particular should be avoided, such as red, violet and black
3. include a “safe area” to allow for different visualization formats, i.e wide screen, tablet etc.



*Picture: safe area*

4. Structure contents: tables of content, identification of the chapter, highlighting keywords etc
5. Balance the use of text, tables and figures:
  - a. Max 5 lines per slide are suggested, maximize the use of keywords
  - b. pictures should enhance the meaning of your words, not distract from the discourse so ensure clarity and appropriateness,.

### Shooting and post-production

The first phase of the planning activity is the preparation of a master plan including all the elements necessary to establish the workload and schedules: number of modules to be produced, the number of total video lessons, teacher for each video lesson (or group of videolesson), production deadlines. Following the training of the teacher and the preparation of graphic material, we proceed to the registration phase, post-production and loading of the final product within the learning platform:

- The recording of video lessons: 1hour of recording room scheduled for a video lesson lasting 42 minutes is required.
- The lesson recording normally takes place in one session: the professor begins and ends without interruption. If, however, the professor wants to stop the recording for any reason (because he realized that he had made a mistake or may have missed a step in the explanation, etc.) he stop at any time and start again from the point where he wants
- The teacher normally records a first "test" lesson that is subject to a quality control;
- once you have determined the quality standard, the teacher shall record the number of lessons that have been attributed. The number of lessons that can be recorded in a day is a variable that depends on many factors: fatigue of the professor, density of the contents to be displayed, questions related to the specific content. Normally, up to 4 lessons can be recorded per day;
- After the recording of the lesson, the teacher is given a copy to review the lesson and identify possible errors
- This is followed by post-production and assembly of the lesson, acknowledging any errors reported by the Professor and correcting any technical oversights. Normally the phase of post-production is extremely limited.
- The next step is the numbering and titling of the lesson, according to specifications provided by the Professor.

When the entire course is finished (recording, post-production and editing, numbering and titling) it can be stored.

### Digitalization of courses and lessons

In the first preliminary activity, is to control that the Didactic Cyberspace contains all the information related to the teaching module of video lessons, video Teacher, Teacher / Tutor.

Particular attention is paid to the preparation of the Teaching / Tutor page:

- Curriculum vitae of the teacher -bibliographic Insights or Videolessons digitized
- Teaching materials related to the video lessons
- Selection of Internet sites
- Network Tutorials
- Exam Guide.

The video lessons are delivered to the technical area ICT that have the task of digitizing, indexing

arguments for each video lesson, and upload the teaching materials. The indexing of teaching materials is based on a report, called "Annex D: indexing of the video lesson and supplementary educational materials", prepared by teachers / tutors with the topics and the minute / second of switching topics, and each topic must indicate the type of connected bookmark topic of video lesson stating the relevant pages of the book or article made reference to or exercise or virtual laboratory, where it exists, or annotated bibliography and web links; keywords related to the subject of the lessons and teaching support materials should also be indicated. These keywords are essential for materials research.

The new modules produced are included in a dedicated General Database with the following information:

- Bachelor of reference of the form
- title of the form
- title, and the lesson number
- name and affiliation University Video Professor
- Production Center which developed the master
- year of manufacture

All the written materials inserted in the video lesson is included in the production archive: the slides of each lesson; of each lesson are shown: a degree which pertains form, the title of the form, the number and title of the lesson, the name of the professor, his University of belonging and the year of production.

## **E-learning and Videolessons Training for Teachers and Tutors**

### Teachers – Authors of contents

The Teachers – Authors of contents (videoprofessors) receive training regarding:

- the UNINETTUNO didactic psico-pedagogic model and use of the platform by both teachers and students,
- technologies and standards for creating the graphic materials supporting the video lessons,
- the use of additional technologies supporting the videolessons.

The first step is an introduction to the UNINETTUNO didactic model, in particular explaining features such as:

- a) the indexing of topics, which fosters hypertext navigation; the indexing serves as a cognitive map that guides the students through the different learning paths, and becomes a cognitive tool needed to strengthen the memory and to stimulate the hypertext exploration;
- b) the modularity of the contents, which allows the student to access the most appropriate level of knowledge/competence for their own learning process;
- c) bookmarks, which have a fundamental role; the icons flashing during the lesson direct the student to the related educational materials both for single topics of video lessons and for the general topics of the course.

The lecturers receive training in the preparation of teaching materials related to multimedia and hypertext included in the video lessons: books, articles, multimedia presentations, exercises, virtual laboratories associated to the topics discussed - provide by the teacher - which become part of the learning materials accompanying the course.

Further training steps include:

- i. defining the optimal video parameters for the preparation of the slides that will be used as cognitive artifact of support to the lesson;
- ii. defining the elements of the storyboard for each lesson, which takes into account the optimal number of slides, the structure of the lesson into subtopics, the conclusion of each sub-topic with a question-stimulus for the student, and all the elements that can further trigger the learning process;
- iii. training on the use of technology integrated into video lesson: multitouch screen / multimedia projector; azimuthal camera for vertical shots on the desk; graphics tablet; other specific technologies.

**Remote support** is provided for the realization of integrated materials in video lessons (slides, video, 3D animation, virtual laboratories. For the definition of the storyboard for the first test lesson, the Graphics Area supports the teacher in the preparation of the slides, transforming the storyboard into formatted slides.

Once all these steps are finalized, the first lesson can be recorded.

### Tutors

The Area Professor coordinates educational activities for teaching area; while the Tutor guide the learning processes of students through synchronous modes of teaching (video conferencing, chat, video chat) and diachronic mode (forum and wiki), being the primary interface between the students and the Uninettuno didactic cyberspace.

Area Professors and Tutors are trained by the Head of Distance Education on the UNINETTUNO didactic model and features of the UNINETTUNO didactic cyberspace they will use for the preparation of a course, the course delivery and evaluation of students' learning performance, and the teaching activities of the Tutor.

Their training covers the following topics:

- a. functions of the didactic cyberspace UNINETTUNO;
- b. the articulation of the Professor Page and the Tutor Page, and the description of learning environments;
- c. the preparation process of the course for the delivery and support documentation for the creation of the following materials:
  - Course Program
  - Indexing and bookmarking of video lessons
  - Concept Map
  - Schedule
  - exam Guide
- d. online communication tools available in didactic cyberspace of UNINETTUNO:
  - the chats, used weekly in line with the protocols of communication management that make effective this type of educational interventions; The students respond to the arguments and incentives of real-time teacher / tutor, they ask questions, critically discuss the contents of the course in real-time supervision of the teacher / tutor, the experts of the subject;

- the Forums, used to stimulate a critical discussion with a higher level of settling and possibility of a broader reflection, without the time constraints for presence; the Teacher / Tutor animates the forum by proposing discussion topics related to topics of each lesson and in this way stimulates discussion among students, triggering a critical, constructive and cooperative type of learning;
  - Virtual Web Classrooms, a tool that requires a high degree of preparation; they are in fact introduced during the discussion on the Forum, on which the Teacher / Tutor asks students which arguments of the course are most critical ones, and which ones they would like to be deepened; in this way before the Virtual Classroom session it is built a collaborative a "ladder" for the contents of the session. This allows the teacher / tutor to prepare his/her speech and to be able to create supportive multimedia materials (slides, presentations, videos, animations, etc.) that can be used via the streaming technology implemented by UNINETTUNO; Virtual Web Classrooms are also recorded and available for students who could not attend to the live sessions and for students of subsequent sessions; in this way every teacher has a possibility to create a constantly updated media library, helping to extend the life cycle of each course and to ensure the maximum update of educational materials after each delivery;
  - Virtual Classrooms on UNINETTUNO Island of Knowledge on Second Life platform: UNINETTUNO has prepared a 3D environment, using the technology of immersive environments structuring provided by Second Life, giving the possibility to teachers and students, through their own avatars, to interact in real time on an immersive scenario that integrates an audio conferencing system and to share applications; This technology is used by some courses on a trial basis; the teachers and tutors receive additional training from the experts of Second Life of UNINETTUNO (from creation of the account and the avatar up to learning the main commands and tools for interaction and presentation of the features existing on the UNINETTUNO Island of Knowledge).
- e. Lastly, teachers and tutors receive information on the UNINETTUNO course delivery model and the use of planning and learning support tools, as well as the ongoing and final evaluation model of the students' performance, based on the quantitative and qualitative evaluation and the final exam organization.

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