Output 4 SCORE2020: *Conditions for and characteristics of MOOCs design models*
Output 4. SCORE2020 : Conditions for and characteristics of MOOCs design models

This work is licensed under a Creative Commons Attribution 4.0 International License: https://creativecommons.org/licenses/by/4.0/. This license lets others distribute, remix, tweak, and build upon this work (even commercially) as long as credit is provided for the original creation. This is among the most accommodating of CC licenses offered, and recommended for maximum dissemination and use of licensed materials.

Disclaimer: This document is produced as part of the European Union-funded project SCORE2020 - Support Centres for Open education and MOOCs in different Regions of Europe 2020. This project supported by the European Commission, DG EAC, under the ERASMUS+ Programme (Ref. 2014-1-NL01-KA203-001309). However, sole responsibility for this report lies with the authors and the Commission is not responsible for any use that may be made of the information contained therein.
Table of contents
Introduction ........................................................................................................................................4
Setting the context for designing MOOCs .........................................................................................4
Designing for scalable services ..........................................................................................................4
Modes for MOOC development ..........................................................................................................4
General framework in designing MOOCs ............................................................................................5
Design structure ................................................................................................................................5
  The vertical design ............................................................................................................................6
  The horizontal design .......................................................................................................................7
  Marco-Meso-Micro level ...................................................................................................................12
References and resources ..................................................................................................................14
References .........................................................................................................................................14
  Some examples of Macro level determinants: ................................................................................15
  Some examples of Meso level determinants: ..................................................................................15
  MOOC projects working on MOOC design models .................................................................15
Introduction
This short output provides a framework to identify and describe conditions for and characteristics of MOOCs design models. The diversity of approaches, experiences, and possibilities suggests that an open, flexible framework is needed to allow the description and design of any model. At the same time, it allows to imagine and design new models in future.

It shortly discusses the main context in designing MOOCs such as designing for scalable services and the different modes for MOOC development. In addition it provides a framework for the design of open, online courses in general making use of the general framework as developed in Output 1. I.e. it gives a design framework at respectively the macro, meso and micro level. As such this output provide a descriptive framework for conditions for and characteristics of MOOCs design models.

These characteristics and the design framework is used in describing various instructional design models for MOOCs in Output 5 and in addition was used in various (multiplier- and training events) to demonstrate the importance for developing sustainable MOOCs.

Setting the context for designing MOOCs
Designing for scalable services
MOOCs are typically designed so that they can run with minimal academic support during the operational phase. The key issue in designing a MOOC is that it should enable large numbers of learners to participate through online technologies that avoid the need to meet in one physical location at the same time. These flexible technological and pedagogical practices have been available in some measure for decades but are now accessible to a greater range and number of users. However, the main new challenge with MOOCs is that the pedagogical model of the course should be such that the efforts of all educational services do not increase significantly as the number of participants increases. The scalability of those services, to ensure that access to and success in the courses is high, is the main design issue for MOOCs.

Consequently, participants should not be given the expectation of an amount of teacher presence similar to what they might expect in a formal and/or paid for (online) course. The operational efforts in the course rely heavily on the community and on technological scalability. Hence, all of the learning services — such as providing (automatic) feedback to each participant, tests and quizzes, the opportunity to earn certificates, and so forth — should be scalable. Also important is that the instructional workload of the academic staff on the payroll of the institution offering the course should not increase (significantly) with the number of participants.

Modes for MOOC development
Currently, several different scenarios are available for MOOC production and delivery:

1. the national or centralised scenario (e.g., France Université Numérique, FUN);
2. the industrial scenario, facilitated by private companies (e.g., Coursera, FutureLearn); and
3. the collaborative–decentralised scenario, promoting diversity by embracing the strength of local–regional implementation (e.g., OpenupEd).
In the first two scenarios, a central MOOC platform is available for the development and delivery of MOOCs. Additional design and implementation services are offered to the academic staff of educational institutions. In the collaborative–decentralised scenario, institutions of regional hub partners have their own MOOC platform, and those partners share different scalable services in the development of MOOCs and in their uptake by society.

An essential element in the latter is the possibility of sharing and reusing all kinds of learning materials and tools. Open licensing policies are therefore crucial elements in the collaborative–decentralised scenario. However, such policies should be stimulated by all MOOC production and delivery scenarios. Currently, reuse and open licensing policies are implemented to a very limited extent, especially in the industrial realm. Some university professors are using MOOCs in a successful symbiosis with their traditional courses, embracing blended learning or the flipped classroom concept. This has usually occurred when the course developers and tutors of the MOOCs were also the ones who had been teaching the traditional course.

**General framework in designing MOOCs**

**Design structure**

The design can be describe as a cube with a vertical structure and a horizontal one. The vertical Design identifies the different levels of concretion to define the action from the most general parameters to the most concrete ones that are related to the process to carry out a MOOC. The horizontal dimension describes the components that allow a description and the subsequent organization and development of a MOOC.
The vertical design

There are different approaches to define the levels to design. Bronfenbrenner (1994) defined an ecological model that established four levels of concreteness. In the most general level, there is a general and encompassing level (macrosystem). In a second level, there is a framework that influences people even though they do not interact entirely with it (exosystem). The third level is the set of situations in which a person interacts face-to-face with others (mesosystem). The last one is the most concrete situation in which a person interacts face-to-face with others (microsystem). A microsystem is, for example, a workshop in which a person participates. This approach is based on an ecological point of view that allows a direct connection with the people life and among the different levels.

From the designer’s point of view, the macro and exo levels could be joined and this whole level could be defined according to the complexity and diversity of each context. The mesolevel could identify the institution (company, university, association) and the microlevel would be the training design. The institution is always a determining context that provides the framework, the means, and the knowledge to organize the activity. The course requires also specific definitions to prepare and to carry out it. Then, there are always two present, real environments. This is the reason why we have considered only three levels at least (Ander-Egg & Aguilar Ibáñez, 1995).

Each level defines usually different kinds of documents. For instance, at Macrolevel, we usually talk about plans. The European commission, the governments, or regions have usually plans. At Mesolevel, in an institution, a company, an association, etc. we have usually projects or programs that are usually shorter. Finally, at Microlevel, we talk about MOOCs; it is the direct intervention and we organize means, trainings, trainers, etc. and we solve technical problems.

By the way, the higher levels as plans are less precise, because they are more general, and the procedures, the action, the activities, task of trainees are very concrete, very close to us. The different levels has also different ways, different approaches. The most general usually are reports, general documents, rules, laws sometimes. The Mesolevel is much more as a project or a program, and, at Microlevel, we are usually talking about how to carry out the learning because at the end what we
want is learning.

In terms of geography, the Macrolevel would be larger, for instance, a country or a set of countries. At Meso level, the territory is the institution and, at Microlevel, we are talking about learning, it is closer. However, the virtual world has no borders and the territory is not a physical one but a knowledge one. For instance, the borders are the language or the scientific field. In terms of time, usually the Macrolevel is for a longer term; in the institution, it is a Middle term; and the MOOC is shorter; when you do a MOOC, you are thinking on 1, 2, or 3 months.

**Geopolitics and Sociopolitics**

In the vertical design, at the macrolevel, the drivers are governments and international communities, entities, associations, etc. However, at this level is also very important to identify two kinds of entities: Geopolitics and Sociopolitics. Geopolitics means the administrative or governmental entities, and Sociopolitics means non-governmental entities. Governmental entities as the European Commission are important; however we have to give visibility to Sociopolitics. In social problems, for instance, these organizations are a really relevant. By the way, these different organizations could also be identified in lower levels as Meso level and Microlevel.

**The horizontal design**

So this was the Vertical Structure, and now the Horizontal Structure that means about what we are describing when we are designing. Basically we are defining 3 elements:

1. First one, there are the goals,
2. The Second one is the Way to achieve the goals,
3. And the third one is the Valuation where we are checking if this way we are reaching these goals.

These three elements are very basic, but they are the three main elements, the basics. These three elements are answering tree questions:

1. The Goal means: what are they learning?
2. The way is: How are they learning?
3. And the Evaluation means: Are they learning?

With these tree basic questions, we could plan at each level and we could design the government politics, the institution framework, and a MOOC syllabus.

**The design elements**

As described in this figure, the main elements of a horizontal design could be the objectives and competences, the contents, the methodologic strategies, the tasks and activities, the didactic resources, the space, the timing, the staff organization, the enrolment, the promotion, the loyalty marketing, and the evaluation.
The objectives and competences:

Traditionally in didactics, we have talked about goals from the teacher’s approach. Nowadays, we are talking much more from the learning, learner’s, or trainee’s approach (Marton, Hounsell, and Entwistle, 1997). The objectives of a MOOC have to be linked to the objectives of the general program. That means that a general program needs some general objectives. Traditionally the term of competences was born describing a job or worker task. Therefore, a competence means what a worker needs to know, to carry out well his job. This was the idea in the 70es when we created the term of competences (McClelland, 1973). When we transfer the term competence to the learning, that means that learners will be good workers. We are thinking about learning oriented to inclusion in the workplace. Good learning in terms of competences means that the trainee is developing skills and abilities for a competence.

The contents:

For one goal, we have several contents. There are concepts. There are values, attitudes, feelings. There also procedures. We have also relationships. There is a support. And there is also the communication. A main question is how and who selects the content. We have to decide which the sequence is. There is discussion in distance education if we have to pace or not. Pacing means a sequence. This is the problem of openness.

The methodologic strategies:

The Methodology is very important. There is an approach for learning, for instance, transmitting, expressing, discussing, researching, reproducing, creating, solving, assimilating, etc. When we think about MOOCs we are only thinking on the first one: Transmitting. So we give videos, we give text, we give audios sometimes. So this is a transmitting methodology. We have to think
divergently, open your mind, and think about other kind of activities that could be useful. Open methodology.

- The resources:

  The resources are important. In Mesolevel, they will decide about them as a general condition, for instance, about financial means. However, the platform election is another relevant decision in MOOCs.

  The resources are the means that the trainee is using to learn. You could provide them or ask trainees to look for. We have to decide about the availability and openness. The use of OER is one characteristic of MOOC. They should be free. The resources, means, and tools are relevant questions to define in our design.
The tasks and activities:

At mesolevel, the tasks and activities are related to the institution, staff, and trainers. They link directly to designing tasks.

According to the objective, the resources and the methodology are, we will offer activities. The activity is the description of the learning, the trainee’s action. These activities could be related to their context.
• The space:
  The space means where we are teaching, where trainees are training, and the context. The relationship of learning with the context is also very important. In this case, the use of realia (real objects) is relevant. It could be a building, a plant, a museum, a newspaper... When we talk about MOOCs, it doesn't mean without relation with the context.

• The timing:
  The central question is if we are pacing or not. Pacing means there is a sequence, an order, including we could have deadlines, or not. Flexibility is very important. Timing is also timing related to the workload, which means the effort a student has to do to learn and that is translated in terms of ECTS.

• The staff organization:
  Staff organization is also very important. We have to decide at Mesolevel which is the technical staff, which are the functions of the personnel, who are the teachers, the tutors, and so on.

• The enrolment:
  Enrolment is very important in MOOCs, because we are talking about a massive enrolment. We have to think about the target group. One way could be defining a persona; that means a typical trainee as we are expecting him/her. We cannot be beginning always from zero level.

• The promotion:
  The promotion means advertising. We have to think about means, engagement, and strategy.
• The loyalty marketing:

Loyalty marketing is very important because we have real problems with dropout. The engagement strategy is related to it as the availability of certificates.

• The evaluation:

The evaluation is the intentional, timed and organized process, according to some criteria and a code of ethics, through which any of the participants, all of them or an external agent, collect, analyse, diagnose and use information about any or all Components of the training intervention process (including evaluation itself) through integrated and contextualized mechanisms, strategies and resources. (Feliz, 2008)

Some of the previous topics are related to the evaluation. Usually evaluation is explained at the end but really, the evaluation is not the last theme. Evaluation does not mean an exam; it is not only an exam. The exam is a kind of evaluation. There is an evaluation ate the beginning to test the starting level of trainees; there is a processual evaluation that allows trainers to know how learners are learning; and there is a final evaluation to check the learning level that trainees have achieved and their satisfaction level. Each of them requires specific tools and means.

The evaluation is not only assessment. It should focus the whole process and as well the own design. For this last question, some indicators should be taken in consideration as: whether is reacting to needs; it is oriented to goals; there is cohesion as a whole; the coherence among components; it is plausible; the formulation is suitable; the social convenience; the adaptation and adaptability to the target group; the relationship with the context; the innovating degree; the quality; and it is based on results.

Marco-Meso-Micro level

As such to describe characteristics of MOOCs design models, one needs to incorporate three levels: both first ones are related to determinants as in the general context (Macro level) as in the Institution context (Meso level). The third level (Micro) is related to the description of a course model and is based on the element of a course design in open environments. Levels 1 and 2 explain why courses
designs should or could be in a way and not in another one. Level 3 allow describing, analysis, and planning. The framework has to be exhaustive and open. That means that some elements could be Ø and other ones could be added if, for circumstances, other ones appear.

**Elements on three levels for design**

1. Macro level (general context)
   - 1.1. Philosophical principles
   - 1.2. Technological determinants
   - 1.3. Legal framework
   - 1.4. Institutional network
   - 1.5. Economical background
   - 1.6. Social context

2. Meso level (institution context)
   - 2.1. Goals and reputation
   - 2.2. Organization
   - 2.3. History and antecedents
   - 2.4. Rules and usages
   - 2.5. Workforces
   - 2.6. Training service (if not educational)
   - 2.7. Technological means and supports
   - 2.8. Financial sources
   - 2.9. Students and learners
   - 2.10. Expected results and indicators
   - 2.11. Territory
   - 2.12. Calendar
   - 2.13. Promotion strategies
   - 2.14. Financial resources
   - 2.15. Evaluation commitments

3. Micro level (MOC level)
   - 3.1. Diagnosis (needs and demands)
   - 3.2. Target group
   - 3.3. Goals and/or competences
   - 3.4. Training contents
   - 3.5. Didactical strategies
   - 3.6. Tasks or activities
   - 3.7. Resources and means
   - 3.8. Environments
   - 3.9. Timing
   - 3.10. Personal organization
   - 3.11. Dissemination
   - 3.12. Registration procedures
   - 3.13. Loyalty
   - 3.14. Assessment

This framework could be organized as a table to describe MOOC models or as a check list to identify model elements.
References and resources

References

http://www.psy.cmu.edu/~siegler/35bronfебrenner94.pdf


http://www.casadellibro.com/libro-diseno-de-programas-en-educacion-social/9788448174996/1802966


http://www.researchgate.net/publication/279178886_MOOCs_Design_and_Development_Using_Active_Learning_Pedagogy_and_Instructional_Design_Model_in_MITx_Courses_on_the_edX_Platform

Lackner, E. & Kopp, M. (2014) Do MOOCs need a Special Instructional Design? 
http://www.researchgate.net/publication/263784897_Do_MOOCs_need_a_Special_Instructional_Design


https://www.google.es/url?sa=t&rct=j&q=&esrc=s&source=web&cd=5&ved=0CDYQFjAEahUKEwjuld-erqvlAhXBOxQKHZ0bBTw&url=https%3A%2F%2Foerknowledgecloud.org%2Fsites%2Foerknowledgecloud.org%2Ffiles%2F1-s2.0-S036013151400178X-main.pdf&usg=AFQjCNEV7y20v_b18CkVv1WApzRAxGXJeg&sig2=h2FiF5R7CDZyLubz1MZ3QA&cad=rjt

Some examples of Macro level determinants:
  a. FUN (France): https://www.france-universite-numerique-mooc.fr/

The French government has created the FUN platform for MOOCs. It is expected that most French MOOCs would be located in it and, as we know, each platform provides tools that determine or invite what you are doing or not.

b. European ECO Project: https://ecolearning.eu/

European projects are based on a call that determines a lot of aspects and elements as goals, means, funding, timing, possibilities, etc. that could not be changed after being approved. For instance, the calendar has deadlines for each iteration and you cannot change them with the same flexibility as you were organizing them only for your university.

Some examples of Meso level determinants:
  1. Uninettuno and Polimi

Uninettuno is a distance university and Polimi is a traditional face-to-face one in Italy. The procedures and needs to design MOOCs, train teachers, or enrol students cannot be the same in both contexts. Uninettuno has a lot of facilities and means oriented to elearning. They know how to organize courses and they have to adapt the classical distance model to MOOC one. Polimi have to create new structures, perhaps rules, train teachers, etc.

  2. Universidad Abierta (UNED)

The National Distance University of Spain (UNED) has a specific program for open courses. Firstly, they created Open Access and they convert it in Cursos COMA (MOOC in Spanish). This program has its own open source platform (OpenEdu). If a teacher, teachers’ team, department or faculty want to organize their MOC, they will use this platform and will be obliged by the UNED rules.

MOOC projects working on MOOC design models
  - ECO project: https://ecolearning.eu/
  - MOOC even step-to-step (ECO Project): http://dpli.ir/fgjkSY
  - Summerclass EMMA http://project.europeanmoocs.eu/project/get-involved/summer-school/programme/sessions-emma-summer-school-programme/
  - HANDSON project:
    - http://www.handsonict.eu/download/441/
    - https://www.researchgate.net/publication/281632822_Teachers_Perceptions_About_the_HANDSON_MOOC_A_Learning_Design_Studio_Case
  - LocoMotion on low production costs MOOC : http://moocs4all.eu/
  - http://tec-variety.com
  - https://onlinelearninginsights.wordpress.com/tag/how-to-design-a-mooc/