Quality Frameworks for Open Education

Anastasios (Tasos) Koutoumanos, PhD
Director, Eummena

14th EdReNe seminar | 24-25 April 2017, Athens
The **European Alliance** for **Quality of Massive Open Online Courses and Open Education (MOOQ)**

Five founding partners:

- Open University of the Netherlands (*Coordinator, NL*)
- Hellenic Open University (*GR*)
- Hellenic National Quality Infrastructure System (*GR*)
- Universidade Aberta (*PT*)
- Ecole Normale Supérieure de Lyon (*FR*)

EU funded project (ends Aug 2018), that builds around:

(a) the **modeling** of well-structured representations of Learning Opportunities with explicit integration of **learning outcome** and **competence** related information and

(b) implementation of technology-enhanced, flexible **learning pathways**.

[COMPASS: Composing Lifelong Learning Opportunity Pathways through Standards-based Services](http://learning-compass.eu/)
Quality: some definitions (among many...)

the degree to which a system, component or process meets:
(1) the specified requirements, and
(2) the needs and expectations of customers.

IEEE 601.12:1990

the totality of features and characteristics of a product, process or service that bear its ability to satisfy explicit or implicit needs.

ISO 8402:1994

the ability of a set of inherent characteristics of a product, system or process to meet the requirements of customers and other stakeholders.

ISO 9000:2000
Quality assurance, quality management, quality control, ...

- **quality assurance ex-post**: measuring of error rates at the end of production
- **in-process quality assurance**: measurement during the production process
- **process-oriented quality management**: process optimization and change management
- **total quality management**: holistic quality management as cross-organizational management philosophy

inspection ➔ quality control ➔ quality assurance ➔ strategic quality management

| “Quality management systems. Fundamentals and vocabulary” |
“Open” Education

Source: https://www.flickr.com/photos/opensourceway/
Waves of Open Education

800 BCE - Open Discourse! (Socrates, Confucius)

1800 CE - Open Learning! (Pestalozzi, Piaget, Vygotski)

1960s - Open Classrooms

1960s - Open Universities

1990s - Open Educational Resources

2000s - Open Online Collaboration

2010s - Open Educational Practices

Now - Open Learning Environments
Dimensions of Openness in education

Open innovations
Open methodologies
Open standards
Open technologies
Open resources
Open access
Open licensing
Open availability

Dimensions of Openness

Visionary

Source: Christian Stracke (2016)
Challenges of Openness in education

Innovations for changing & opening up education to improve the overall quality!

Dimensions of Openness

- Policies
- Flipping
- Visionary
- New potentials
- New approaches

Legal
- ISO/IEC 40180
- New frameworks
- New services
- Communities

Operational
- New products
- MOOCs
- New services
- Communities

Inclusion
- Equity for all
- Re-usage for free
- CC licenses
- OER

New awarding
- Assessment
- New awarding

Source: Christian Stracke (2016)
The Core Challenge: 2030 Agenda of the United Nations

Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
Dimensions of Open Education

Macro: Policies and Curricula

Meso: Strategic & organisational

Micro: Organisation and Design

Source: Christian Stracke (2016)
Quality in Open Education

Macro: Movement & Strategies

Meso: Strategic & organisational Frameworks & Standards

Micro: Competence & Community

Source: Christian Stracke (2016)
Quality in Open Education
The MOOCs are coming... a long-awaited innovation?


Source: https://www.flickr.com/photos/gforsythe
MOOC: European definition

● MOOCs are “courses available to masses of online learners for little or no cost” (Selwyn, Bulfin, & Pangrazio, 2015)

● A MOOC is “an online course designed for large number of participants that can be accessed by anyone anywhere, as long as they have an internet connection, is open to everyone without entry qualifications and offers a full/complete course experience online for free”

●

“A MOOC is an online course aimed at unlimited participation and open access via the web.

Source: Wikipedia (updated regularly)
MOOCs... and friends

MOOC: Massive Open Online Course
μOOC: Micro Open Online Course
LOOC: Local Open Online Course
MOOR: Massive Open Online Research
ROOC: Regional Open Online Course
HOOC: Hybrid Open Online Course
COOC: Classically Offered Online Course
SPOC: Small Private Online Course
SOOC: Selective Open Online Course
DOCC: Distributed Open Collaborative Course

Every letter is Negotiable!
xMOOC vs cMOOC: *Different approaches for pedagogy*

**xMOOC:** professor-centric
- focus is on the learner's individual acquisition of knowledge.

**cMOOC:** built around connectivity
- focus is on the learner's engagement in the network of knowledge production

In the emerging new *combined approaches*, learners are expected to take an active role in and be responsible for their own learning, but also to actively engage in helping build a supporting learning community.
MOOQ - The main goals

Long-term goal:
● improvement of future online courses and associated educational resources,
● by developing quality indicators, metrics, and instruments.

Main objectives:
1. MOOC Design Patterns & Best Practices based on a large-scale survey
2. Pre-standard “European Massive Online Open Course Quality Framework” (Euro-MOOC-QF)
3. Q-generation of MOOCs (qMOOCS)
4. Practical solutions to Quality Assessment
MOOC Quality Reference Framework (QRF)

- QRF for the design, evaluation, improvement, and comparison of MOOCs
- Drawing upon formal standardization principles issued by ISO and CEN
- Describes internal & external evaluation mechanisms for
  - processes, and
  - content

- Method of best practice benchmarking
- Adapts the process model from EN ISO/IEC 19796-1
  - 5 phases: analysis, design, implementation, learning process, evaluation
- Defines a matrix for the MOOC QRF with
  - 3 pillars (pedagogical, technological and business model),
  - 34 dimensions
  - 123 process descriptors
Euro-MOOC-QF Pre-Standard

Will address:

- educational material (data)
- related educational design (process) and requirements for the effective functioning of MOOCs in the educational operation of a HE organization

Shall include a terminology part concerned with terms accompanied by their definitions, for conformity (use of a common and clearly understood language).

1. Technical specifications (formative)
2. Guidelines, instructions (informative)
3. Best practice examples (informative)
<table>
<thead>
<tr>
<th>CEN/TC 343</th>
<th>&quot;Solid Recovered Fuels&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEN/TC 344</td>
<td>&quot;Steel static storage systems&quot;</td>
</tr>
<tr>
<td>CEN/TC 345</td>
<td>&quot;Characterization of soils&quot;</td>
</tr>
<tr>
<td>CEN/TC 346</td>
<td>&quot;Conservation of Cultural Heritage&quot;</td>
</tr>
<tr>
<td>CEN/TC 347</td>
<td>&quot;Methods for analysis of allergens&quot;</td>
</tr>
<tr>
<td>CEN/TC 348</td>
<td>&quot;Facilities Management&quot;</td>
</tr>
<tr>
<td>CEN/TC 349</td>
<td>&quot;Sealants for joints in building construction&quot;</td>
</tr>
<tr>
<td>CEN/TC 350</td>
<td>&quot;Sustainability of construction works&quot;</td>
</tr>
<tr>
<td>CEN/TC 351</td>
<td>&quot;Construction Products - Assessment of release of dangerous substances&quot;</td>
</tr>
<tr>
<td>CEN/TC 352</td>
<td>&quot;Nanotechnologies&quot;</td>
</tr>
<tr>
<td><strong>CEN/TC 353</strong></td>
<td>&quot;Information and Communication Technologies for Learning Education and Training&quot;</td>
</tr>
<tr>
<td>CEN/TC 354</td>
<td>&quot;Non-type approved light motorized vehicles for the transportation of persons and goods and related facilities&quot;</td>
</tr>
<tr>
<td>CEN/TC 355</td>
<td>&quot;Project Committee - Lighters&quot;</td>
</tr>
<tr>
<td>CEN/TC 356</td>
<td>&quot;Project Committee - Industrial fans - safety requirements&quot;</td>
</tr>
</tbody>
</table>
UNESCO Paris 2012 OER Declaration

It makes ten recommendations for governments relating to OER: ...

e. Support capacity building for the sustainable development of quality learning materials

Support institutions, train and motivate teachers and other personnel to produce and share high-quality, accessible educational resources, taking into account local needs and the full diversity of learners. Promote quality assurance and peer review of OER. Encourage the development of mechanisms for the assessment and certification of learning outcomes achieved through OER.

http://www.unesco.org/new/en/communication-and-information/access-to-knowledge/open-educational-resources/what-is-the-paris-oer-declaration/
Key ingredient for Quality: “Taxonomy” for Schools

How?
Efficient strategy is vital for success and quality and includes a Taxonomy* for Schools. The taxonomy needs to be designed, agreed with all stakeholders and deployed for all schools’ activities.

* a classification system that is ordered in some way.

Key benefits
A shared language for describing learning outcomes, stages and performance.
Essential for Instructional Design, Learning Materials and Assessments.
Enables an Intl Marketplace of Learning Resources.
Educational taxonomies and curriculums

Educational taxonomy sets the **learning goals** for **what** students should know and be able to do at **each grade level**.

Educational taxonomies (or *educational standards*), are **not** a curriculum.

- **Standards** is **what** students need to learn.
- **Curriculum** is **how** students will learn it.
Computing was re-introduced in UK in 2013 - designed **not by bureaucrats** but **by teachers** and other sector experts, with input from **industry leaders** like Microsoft, Google and the computer games industry.

Aligned to the sort of skills which the **jobs of the future** - and, for that matter, the jobs of the present - demand. From now on, all UK reforms ensure that every child gets a solid grounding in these essential skills - giving them the best possible start to their future.
There’s a huge move away from ICT and towards computational thinking.

<table>
<thead>
<tr>
<th>Objective</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>AO1</td>
<td>Demonstrate knowledge and understanding of the key concepts and principles of computer science.</td>
</tr>
<tr>
<td>AO2</td>
<td>Apply knowledge and understanding of key concepts and principles of computer science.</td>
</tr>
</tbody>
</table>
| AO3 | Analyse problems in computational terms:  
- to make reasoned judgements  
- to design, program, evaluate and refine solutions. | 30% |

AO1: Demonstrate knowledge and understanding of the key concepts and principles of computer science.

<table>
<thead>
<tr>
<th>Strands</th>
<th>Elements</th>
<th>Coverage</th>
<th>Interpretations and definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/a</td>
<td>1a – Demonstrate knowledge of the key concepts and principles of computer science.</td>
<td>Full coverage in each set of assessments (but not in every assessment).</td>
<td>In the context of this assessment objective, demonstrate means showing knowledge and understanding – for example, by stating or explaining a fact, concept or principle.</td>
</tr>
<tr>
<td></td>
<td>1b – Demonstrate understanding of the key concepts and principles of computer science.</td>
<td>No more than 15% of the total marks for the qualification should reward demonstrating knowledge in isolation.</td>
<td>Key concepts and principles of computer science are aspects of subject content. Awarding organisations should explain their approach to targeting them in their assessment strategy.</td>
</tr>
</tbody>
</table>
### EU e-Competence Framework

#### Dimension 1: e-Competence Area

<table>
<thead>
<tr>
<th>Dimension 2</th>
<th>Dimension 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. PLAN</td>
<td>e-1 to e-5, related to EQF levels 1 to 8 and linked to EQF levels 3–8</td>
</tr>
<tr>
<td>A.1. IS and Business Strategy Alignment</td>
<td></td>
</tr>
<tr>
<td>A.2. Service Level Management</td>
<td></td>
</tr>
<tr>
<td>A.3. Business Plan Development</td>
<td></td>
</tr>
<tr>
<td>A.4. Product/Service Planning</td>
<td></td>
</tr>
<tr>
<td>A.5. Architecture Design</td>
<td></td>
</tr>
<tr>
<td>A.6. Application Design</td>
<td></td>
</tr>
<tr>
<td>A.7. Technology Trend Monitoring</td>
<td></td>
</tr>
<tr>
<td>A.8. Sustainable Development</td>
<td></td>
</tr>
<tr>
<td>A.9. Innovating</td>
<td></td>
</tr>
</tbody>
</table>

#### Dimension 2: e-Competence

<table>
<thead>
<tr>
<th>Dimension 3</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>e-1 to e-5, related to EQF levels 1 to 8 and linked to EQF levels 3–8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. BUILD</td>
<td>B.3. Testing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Constructs and executes systematic test procedures for ICT systems or customer usability requirements to establish compliance with design specifications. Ensures that new or revised components or systems perform to expectation. Ensures meeting of internal, external, national and international standards; including health and safety, usability, performance, reliability or compatibility. Produces documents and reports to evidence certification requirements.**

<table>
<thead>
<tr>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performs simple tests in strict compliance with detailed instructions.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organises test programmes and builds scripts to stress test potential vulnerabilities. Records and reports outcomes providing analysis of results.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exploits specialist knowledge to supervise complex testing programmes. Ensures tests and results are documented to provide input to subsequent process owners such as designers, users or maintainers. Accountable for compliance with testing procedures including a documented audit trail.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exploits wide ranging specialist knowledge to create a process for the entire testing activity, including the establishment of internal standard of practices. Provides expert guidance and advice to the testing team.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Dimension 4: Knowledge

- **K1** techniques, infrastructure and tools to be used in the testing process
- **K2** the lifecycle of a testing process
- **K3** the different sorts of tests (functional, integration, performance, usability, stress etc.)
- **K4** national and international standards defining quality criteria for testing
- **K5** web, cloud and mobile technologies and environmental requirements

#### Skills

- **S1** create and manage a test plan
- **S2** manage and evaluate the test process
- **S3** design tests of ICT systems
- **S4** prepare and conduct tests of ICT systems
- **S5** report and document tests and results

---

**Note:** The table and diagram represent the EU e-Competence Framework, detailing various dimensions and levels of expertise in the field of ICT testing.
ISTE Standards (2016)

Consist of five sets of standards and provide a framework for amplifying digital age learning, teaching and leading.

Emphasize the skills and qualities we want for students, enabling them to engage and thrive in a connected, digital world.

Are designed to serve the field for 5-10 years as a blueprint for tech adoption and implementation.

“Education technology standards to transform learning and teaching”
US: The “Common Core” standards

We can’t predict the future but we can better prepare our children for it!

http://www.corestandards.org/
Learning Technology Standardisation

Challenges addressed:

● Interoperability
  ○ technical
  ○ organisational

● Quality
  ○ process
  ○ outcome

● Sustainability
Standards & specs everywhere!

HTML, XHTML, XML, PNG, SVG, SMIL, JPEG, MPEG

Content Authoring

Learning Design

SCORM, Simple Sequencing

Test Authoring

Metadata

Learning Activity Design

Metadata Tagging

Content Packaging

Publish

Content Management / Digital Repository

Search & Retrieve

Digital Repositories

Metadata

Learning Development

- Curriculum
- Courses
- Modules

Course Catalogue

Student Record System

Enterprise Enrolments

Results

Enterprise Enrolment

Options

Negotiation of Learning

Unmet Demand

LIP Transcript

Outcomes

LIP

Lifelong Learner: Personal Development Planning

VLE/Services

Learning Activities

Co-ordination

Content/Sequencing

Collaboration

Assessment

Learning Design

SCORM, Simple Sequencing

ISO Collaborative Learning

QTI Results

Key

System /Activity

Process/Potential System

Data Flow, Transaction

Specification Used
European and International Standards

- **EN 15981 (EuroLMAI):** European Learner Mobility - Achievement Information
- **EN 15982 (MLO-AD):** Metadata on learning opportunities (MLO) - Advertising
- **EN 15983 (CEF):** Curriculum Exchange Format (CEF)
- **ISO/IEC 19796-1 (RFDQ):** unique Quality Standard for Education worldwide, other parts: Methods & metrics (2009), Quality Model (soon)
- **ISO/IEC 19788 (MLR):** – Metadata for Learning Resources, also Multi-part standard, compliant with DC
- **ISO/IEC 20006:** Information Model for Competency
- **ISO/IEC 29163 (SCORM):** Combination of several specifications for Learning Management Systems & Objects
- **ISO/IEC 12785 (CP):** Content Packaging – Aggregation of Learning Objects
Quality-specific standardisation initiatives for Education

- EFQM Excellence Model framework
  (Q\textit{M} framework by the European Foundation for Q\textit{u}ality Management)
- French Code of Practice in e-Learning
  (best practices, guides and benchmarking by AFNOR)
- Quality Guides by NADE
  (by the Norwegian Association for Distance and Flexible Education)
- Systems of Certification and Accreditation
  - Distance Education and Training Council of the USA
  - British Quality Assurance Agency for Higher Education (QAA)
  - Hellenic Quality Assurance & Accreditation Agency (HQA / ΑΔΙΠ)
### A long timeline of initiatives:

**Need to pick up 10 yrs after!**

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Organization/Agency</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guidelines on the Quality Assurance of Distance Learning</td>
<td>QAA - Quality Assurance Agency for Higher Education</td>
<td>1999</td>
</tr>
<tr>
<td>Standards in Open and Distance Learning</td>
<td>British ODLQC Open and Distance Learning Quality Council</td>
<td>2000</td>
</tr>
<tr>
<td>IHEP’s Quality on the line</td>
<td>Institute for Higher Education Policy (EUA)</td>
<td>2000</td>
</tr>
<tr>
<td>NADE’S Quality Standards for Distance Education</td>
<td>Norwegian Association for Distance Education</td>
<td>2001</td>
</tr>
<tr>
<td>Sloan consortium’s five pillars of quality</td>
<td>The Sloan Consortium</td>
<td>2002</td>
</tr>
<tr>
<td>EADL Quality Guide</td>
<td>European Association for Distance</td>
<td>2003</td>
</tr>
<tr>
<td>ISO/IEC 19796-1 Standard on Quality for e-learning</td>
<td>ISO - International Organization for Standardization</td>
<td>2005</td>
</tr>
<tr>
<td>MEC/SEED Benchmarks for Quality of Distance Higher Education</td>
<td>Brazilian Ministry of Education and Culture, Dpt of Distance Education</td>
<td>2007</td>
</tr>
</tbody>
</table>

Structured on a Reference Model of processes covering the development lifecycle of educational solutions, suitable for developing different types of digital educational solutions, with 7 categories of processes and 38 subprocesses.

- ISO/IEC 19796-1: “How to Use the New Quality Standard for Learning, Education and Training”
- ISO/IEC 19796-2: “Quality Model”
- ISO/IEC 19796-3: “Reference Methods and Metrics”
- ISO/IEC 19796-4: “Best practice and implementation guide”
Dimensions in Quality of Open Education

- Learning process
- Analysis
- Implementation
- Design
- Evaluation

Learner
## Quality Dimensions in the (adapted) ISO/IEC 19796-1

<table>
<thead>
<tr>
<th>ID</th>
<th>ISO/IEC 19796-1</th>
<th>New ID</th>
<th>Proposed Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>Needs Analysis</td>
<td>AN</td>
<td>Analysis</td>
</tr>
<tr>
<td>FA</td>
<td>Framework Analysis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CD</td>
<td>Conception / Design</td>
<td>DE</td>
<td>Design</td>
</tr>
<tr>
<td>DP</td>
<td>Development / Production</td>
<td>PR</td>
<td>Production</td>
</tr>
<tr>
<td>IM</td>
<td>Implementation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LP</td>
<td>Learning Process</td>
<td>LE</td>
<td>Learning</td>
</tr>
<tr>
<td>EO</td>
<td>Evaluation/ Optimization</td>
<td>EV</td>
<td>Evaluation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OP</td>
<td>Optimization</td>
</tr>
</tbody>
</table>
ISO/IEC 19796-1: The Reference Model

Needs Analysis
- Initiation
- Stakeholder identification
- Definition of objectives
- Demand analysis

Framework Analysis
- Analysis of the external context
- Analysis of staff resources
- Analysis of target groups
- Analysis of the institutional and organizational context
- Time and budget planning
- Environment analysis

Conception / Design
- Learning objectives
- Concept for contents
- Didactical concept/methods
- Roles and activities
- Organizational concept
- Technical concept
- Concept for media and interaction design
- Media Concept
- Communication concept
- Concept for tests and evaluation
- Concept for maintenance

Development / Production
- Content realization
- Design realization
- Media realization
- Technical realization
- Maintenance

Implementation
- Testing of learning resources
- Adaptation of learning resources
- Activation of learning resources
- Organization of use
- Technical infrastructure

Learning Process / Realization
- Administration
- Activities
- Review of competencies levels

Evaluation / Optimization
- Planning
- Realization
- Analysis
- Optimization / improvement
Discussion, ideas’ sharing & beyond!

LEARNING COMPASS
http://learning-compass.eu/

mooc
http://mooc-quality.eu/
http://survey.mooc-quality.eu

Anastasios (Tasos) Koutoumanos PhD
email: tk@eummena.org

http://eummena.org/
Draft

notes and draft slides
<table>
<thead>
<tr>
<th>Pillars</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedagogical</td>
<td>Learning opportunities and course planning</td>
</tr>
<tr>
<td></td>
<td>Pedagogical design</td>
</tr>
<tr>
<td></td>
<td>Learning pace and progress</td>
</tr>
<tr>
<td></td>
<td>Equity / Inclusion</td>
</tr>
<tr>
<td></td>
<td>Openness of content data and software, flexibility and personalization</td>
</tr>
<tr>
<td></td>
<td>Learning resources and support</td>
</tr>
<tr>
<td></td>
<td>Learning assessment and certification</td>
</tr>
<tr>
<td></td>
<td>Evaluation planning</td>
</tr>
<tr>
<td></td>
<td>Evaluation realization</td>
</tr>
<tr>
<td></td>
<td>Evaluation analysis</td>
</tr>
<tr>
<td></td>
<td>Involvement of all stakeholders</td>
</tr>
<tr>
<td></td>
<td>Learning design optimization</td>
</tr>
<tr>
<td></td>
<td>Evaluation optimization</td>
</tr>
<tr>
<td>Pillars</td>
<td>Dimensions</td>
</tr>
<tr>
<td>----------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Technological</td>
<td>Learning environment approach</td>
</tr>
<tr>
<td></td>
<td>Requirements</td>
</tr>
<tr>
<td></td>
<td>Learning environment design</td>
</tr>
<tr>
<td></td>
<td>Infrastructure and resources, data and metadata management</td>
</tr>
<tr>
<td></td>
<td>Evaluation planning</td>
</tr>
<tr>
<td></td>
<td>Evaluation realization</td>
</tr>
<tr>
<td></td>
<td>Evaluation analysis</td>
</tr>
<tr>
<td></td>
<td>Involvement of all stakeholders</td>
</tr>
<tr>
<td></td>
<td>Learning environment optimization</td>
</tr>
<tr>
<td></td>
<td>Evaluation optimization</td>
</tr>
<tr>
<td>Pillars</td>
<td>Dimensions</td>
</tr>
<tr>
<td>----------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Business Model</td>
<td>Social demand / Market analysis</td>
</tr>
<tr>
<td></td>
<td>Return On Investment (ROI)</td>
</tr>
<tr>
<td></td>
<td>Scalability</td>
</tr>
<tr>
<td></td>
<td>Budget</td>
</tr>
<tr>
<td></td>
<td>Human and technological resources</td>
</tr>
<tr>
<td></td>
<td>Evaluation planning</td>
</tr>
<tr>
<td></td>
<td>Evaluation analysis</td>
</tr>
<tr>
<td></td>
<td>Involvement of all stakeholders</td>
</tr>
<tr>
<td></td>
<td>Vision and mission optimization</td>
</tr>
<tr>
<td></td>
<td>Analysis optimization</td>
</tr>
</tbody>
</table>
# Needs and Framework Analysis

<table>
<thead>
<tr>
<th>Pillars</th>
<th>Dimensions</th>
<th>Descriptors</th>
</tr>
</thead>
</table>
| Pedagogical | Learning opportunities and context | - The defined target participant groups are justified clearly.  
- Diverse socio-cultural contexts are identified and taken into consideration when planning the MOOC. |
| Technological | Learning environment definition | - Provider assesses the interest to use an external distribution platform or internal solution.  
- The MOOC reflects social or market demands for the MOOC type(s) specified.  
- All stakeholders to be involved are selected and are active in the market described.  
- The MOOC has a clear plan to reach new target groups.  
- The MOOC provides flexible learning opportunities that widens participation in Higher Education. |
| Business Model | Return On Investment (ROI) | - A cost estimation is produced for setting up and running the MOOC  
- A target ROI is determined  
- The economic context is conducive to the development of the MOOC.  
- The political context is conducive to the development of the MOOC (optional).  
- The organizational/institutional context is conducive to the development of the MOOC.  
- The educational context is conducive to the development of the MOOC.  
- Business/institutional goals are clearly identified.  
- There is a detailed financial plan.  
- A cost-benefit analysis is performed.  
- Contractual constraints (e.g., with staff) are planned. |
| Scalability | | - The provider is able to estimate the potential of the MOOC to scale up to a large number of participants.  
- The provider is able to estimate the type and cost of resources needed to support a large number of participants, i.e., the human and technical resources. |