

EvalMOOC: A Pentadimensional Instrument of Improvement for the Quality Evaluation of MOOC

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Received: 13 March 2016 • Accepted: 16 May 2016

Abstract: Some authors question the inadequate quality of the MOOC (Massive Open Online Courses) for which no registration fee is required. Considering this, the students could be affected as a consequence of the lack of a common base of knowledge and academic training for employability. In this regard, a line of research arises at Universidad Pablo de Olavide (Seville) that is developed at the Computational Intelligence Laboratory (LIC, by its acronym in Spanish) by a Research Group of EduInnovagogía (HUM-971) and that presents a comparative panorama of the evaluation indicators of two quality valuation instruments of the MOOC: EduTool[®] and uMuMOOC. Once analyzed the strengths of both tools, this study proposes a design construct of the future instruments of improvement for quality evaluation, presented as a five vertex pyramid or pentadimensional representation. In the centre of gravity would be “the acknowledgement of training for employability”. In this way, as of this solid base, the evaluation tools would have to be configured in the following dimensions: learning design, communication-interaction, planning-management, levels of accessibility, and learning methodology.

Key-words: Online Teaching and Training, MOOC, Quality Evaluation, EduTool, uMuMOOC.

1. Introduction

The emergence of user generated content initiatives, in which the content is not delivered to the students but generated jointly by themselves,

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the rise of open educational practices, (OEP), the MOOC, and the creation of new suppliers of self-learning solutions, such as the Open Educational Resources (OER) University, Peer2Peer University or University of the People, are transforming known settings into other domains of a much more uncertain nature. This trend is setting out a challenge for the conservative institutions, especially for universities (Sangrà and Wheeler, 2013).

In this same line, according to the proposals made by different authors (Castaño y Cabero, 2013; Vázquez, López and Barroso, 2015), the main characteristics of the MOOC can be described as follows: they are educational resources that have certain similarity with a class, they start and finish on certain date; they have an assessment mechanism, they are developed online, the access is free, they are open through the web and there is no admission criteria, and they allow the interactive participation on a broad scale of a massive group of students.

The philosophy of this educational modality may imply a democratization of the higher education (Finkle y Masters, 2014; Dillahunt, Wang and Teasley, 2015). Likewise, the demand for these courses places Spain among the five countries with the highest number of students in this educational modality, being led on an international basis only by countries such as the USA, Russia, the United Kingdom, Canada or Brazil (Aguaded, Vázquez-Cano and López-Meneses, 2016). Finally, as it is pointed out by different authors (López-Meneses, Vázquez-Cano and Román, 2015) there has been a worldwide rise of scientific items related to this topic since 2013.

However, this type of training is used by several educational organizations failing to guarantee the minimum quality standard required by the participants. In this regard, it becomes necessary that distance learning users can select the courses that better suit their needs and expectations, and that the educational organizations can improve their offer and, with this, the students satisfaction. Therefore, the comparative descriptive analysis between evaluation instruments of online courses will produce new scenes that will help the design of more efficient quality tools. These new elements will be able to reduce the possible differential existent between the expectations of the participants and their level of satisfaction and, therefore, the large offer of online learning courses will become more reliable and credible, reducing the risk of user withdrawal and offering online courses guaranteed by higher quality parameters (Baldomero, Salmerón and López, 2015).

In this study, the base of these new instruments will be designed grounded on the comparative analysis between the quality valuation tools EduTool[®] (Baldomero and Salmerón, 2015) and uMuMOOC (Guerrero, 2015) that could reduce the possible valuation deficiencies of the normative quality of the MOOC.

2. Antecedents and trends regarding quality evaluation instruments for MOOC

The amount of key research in matters of design of instruments that can be used to evaluate the quality of MOOC started in 2012, to comply with the item 6.2 of the Standard UNE-EN ISO 9001 about Quality Management Systems, when providing the necessary demand to its employees and guarantee their competence. In this regard, it has to be confirmed that the acquired online training complies with the purchase requirements pointed out according to the item 7.4 of the mentioned regulation.

Therefore, the Standard UNE 66181:2012 pretended to work as a guide to identify the characteristics of online learning actions, in a way that the users of online learning platforms could select the courses that best suit their needs and expectations, and that the educational organizations can improve their offer and, with this, the students satisfaction. So, based on this standard, the dimensions covered by the satisfaction factors of online learning are: Employability, Learning Methodology and Accessibility.

From this moment on, the line of research started in the study “Teaching Innovation 2.0 with Information Technologies and Communication in the European Higher Education Area”, framed by the Action 2 of Teaching Development and Innovation Projects of the Universidad Pablo de Olavide (Seville) and developed in the Computational Intelligence Laboratory (LIC) by the Systems and Information Technology Research Group (TEP-240) presents a scene of comparative study between the mentioned regulation standard UNE 66181:2012 and the instrument ADECUR (Baldomero, Salmerón and López, 2015). In this line, ADECUR is an instrument of evaluation able to analyze and identify the distinctive features of the online courses didactic quality, from the scales provided by the socio-constructivist and research paradigm, as a channel to promote an appropriate development of the teaching innovation processes (Cabero and López, 2009).

Through this study, it is concluded that the offering proponents could be accredited with certified MOOC and avoid the offer of learning programs with weak teaching methodologies that are unsuitable according to the current pedagogical theories (Valverde, 2014) and preventing, to the extent possible, the tendency to standarization of knowledge and the serious problems to meet the individual differences due to the massification that leads to a unidirectional communicative design, teacher-centered and content-based. Therefore, the MOOC could be shown as a democratization of higher education but giving priority to the pedagogical interests instead of the economical ones.

Afterwards, the LIC mentioned above analyzed the normative quality of the MOOC through the instrument EduTool[®], registered as a trademark in the Spanish Patent and Trademark Office (3.087.298, in force), that is developed under the sponsorship of the standard UNE 66181:2012 and is the result of the

work included in the PHD thesis entitled “Diffuse standards model for MOOC analysis and evaluation with the quality standard of virtual training”. This work concludes with the same result reached by other studies, where it is demonstrated that the MOOC have a solid pedagogical base in their formats (Glance, Forsey and Riley, 2013). On a general basis, it was possible to state that the quality valuation of the analyzed MOOC was not only above the average punctuation estimated, but that these presented punctuations slightly higher than the average (Roig, Mengual-Andrés and Suárez, 2014).

In this line, Sánchez-Vera and Prendes-Espinosa (2015) show alternative methods to evaluate MOOC in their work. Likewise, the authors point out the necessity of evaluation improvement, this means that they coincide in the need of more research on MOOC evaluation and the use of various methods to achieve it. In this way, the problem that is caused by the massification is found when considering the evaluation that takes part in the global teaching process; this is, when it is understood that to evaluate is to learn and that evolving and learning strategies must be used in this process. These authors follow the same thought as Sandeen (2013), when he states that the evaluation focuses the MOOC development from the beginning, but on the contrary, it is believed that a lot of MOOC focus their attention on the development of quality content or in the learning community, leaving the evaluation and certification behind.

On the other hand, some studies state that there is an inverse relation between the motivation through badges of honour or certification and the acquired knowledge (Daniel, Vázquez-Cano and Gilbert, 2015). In this regard, the certification opens the door for the income of courses fees and, on the other hand, it becomes necessary to know how the learning process is evaluated and how the certifications are valued by the employers.

Following this idea, Chen (2014) carries out a study in which the results are discouraging in respect to the quality evaluation of MOOC. In this line, elite universities are massively offering MOOC aiming to enlarge the access to higher education, commercialization and branding, and the development of new income sources. However, as it is stated by Daniel (2012), despite the fact that the elite universities that participate actively in MOOC got their reputation in research, they may not be the best at teaching, especially at online teaching. In other words, research is different from teaching and the fact that these elite universities that make important achievements in research are prestigious does not mean that they are qualified to offer quality MOOC. This author questions the acceptable quality that the MOOC must keep when no registration fee is necessary (except to obtain the corresponding certification) and that may be affected for the lack of a common base of knowledge and academic training among the students. Finally, he states that carrying out efficient evaluations of MOOC is still an important challenge and warns that there are a lot of different ways in which the participants can cheat during online evaluation, bringing as a result inefficient and null evaluations.

Therefore, it appears necessary a line of work at the LIC by the Research Group of EduInnovagoría (HUM-971), in which it is possible to make a study aiming to compare the instrument EduTool[®] and the tool uMuMOOC, that could eliminate possible defects in the quality evaluation of MOOC increasing their dimensional scope.

3. Used models

3.1. The instrument EduTool[®]

It is a model based on a non-experimental quantitative research design (McMillan and Shumacher, 2005) that adapts the standard UNE 66181:2012 to MOOC. In this adaptation, the information about quality levels was not taken according to a representation system of stars accumulation, as stated by the normative standard. This means that a MOOC could include indicators of different rubrics of higher quality levels not accumulated. Therefore, the MOOC quantitative quality could be evaluated with this instrument stating a difference from the qualitative quality of all the courses that contain the addition of the indicators of the same rubric levels. The aim of this instrument is not to correct the standard but to carry out a more detailed granularity valuation than the one merely qualitative.

In this regard, MOOC could include indicators of different quality levels rubrics without the restriction of being cumulative. Thus, with this instrument it is possible to make a qualitative and quantitative valuation of the dimensions covered by their factors, making an adjustment of the normative standard through a deliberation of the sub-factors of each of the dimensions of the standard UNE 66181:2012 through fuzzy logic (Baldomero and Salmerón, 2015).

The experts evaluated with linguistic variables each of the subfactors of the instrument dimensions and the Gaussian function associates for each element of X (expert's opinion on the linguistic variables scale) a degree of belonging to the fuzzy set. In this context, the addition of the belonging functions of linguistic variables of the experts is shown in Figure 1.

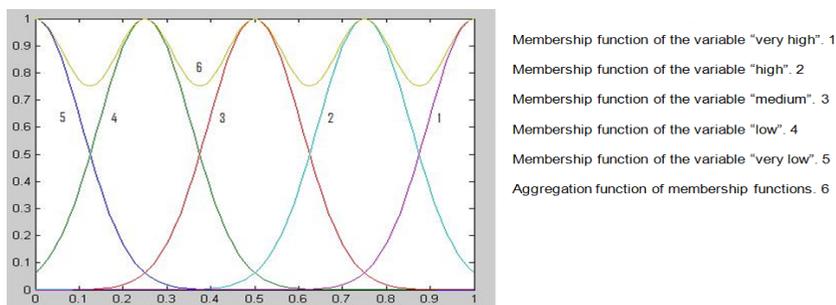


Figure 1. *Function of addition of the belonging functions of the experts linguistic variables*
Source: Baldomero and Salmerón (2015).

The data presented by the experts is based on the fuzzy sets and is originated by the use of linguistic qualifications. In this way, the defuzzification used is focused in the method of the area centroid. As an example for the subfactor 2.2., a defuzzed value of a belonging function associated to the value of the variable X will be returned, as it is shown in the formula 1.

$$\text{Subfactor 2.2} = \frac{\int_0^1 \frac{-(x-0.5)^2}{2xe^{0.02256}} dx + \int_0^1 \frac{-(x-0.75)^2}{5xe^{0.02256}} dx + \int_0^1 \frac{-(x-1)^2}{3xe^{0.02256}} dx}{\int_0^1 \frac{-(x-0.5)^2}{2e^{0.02256}} dx + \int_0^1 \frac{-(x-0.75)^2}{5e^{0.02256}} dx + \int_0^1 \frac{-(x-1)^2}{3e^{0.02256}} dx} = 0,6632$$

Based on the content above, the tool EduTool[®] has the following tridimensional structure (Baldomero and Salmerón, 2015):

1. The dimension of acknowledgement of the learning process for employability has 6 items.
2. The dimension of learning methodology has 43 items distributed in subfactors: didactic-instructional design (11), teaching resources and learning activities (10), tutoring (9) and the technological-digital environment for learning (13).
3. The dimension of the accessibility levels has 21 items distributed in 3 subfactors: the hardware accessibility (7), the software accessibility (7) and the web accessibility (7).

Each item is dichotomous (yes/no) and measures the clarity of the pretensions of each indicator of the subfactor of the corresponding dimension.

3.2. The instrument uMuMOOC

This tool values the pedagogical quality of MOOC in the context of the Universidad de Murcia and that is why it is called uMuMooC (Guerrero, 2015). Although in a second phase the designed instrument will be validated and become subject of a process of content validity through the experts' opinion, in order to verify the characteristics of this tridimensional model, in this tool basically three dimensions have been established in which several subcategories or subfactors and indicators of each are integrated:

1. **Planning/Management.** This dimension includes the formal requirements and basic administration and management aspects that can be implied in the platform MOOC used, related to the learning process and in which two subfactors can be observed: Administration/Management and Accreditation/Certification. Some of the indicators established are: Information about the duration, schedule, certifications, accreditations carried out, if they paid, free, or both.

2. **Learning design.** This second dimension is related to aspects of educational design and integrated by 4 subfactors: teaching-instructional design, content, resources and activities, and evaluation. Some of the indicators mentioned in these components allow to value if the different elements indicated in the pedagogical design and elaboration of learning materials are oriented, for example, to the transfer of learning, competence development and evaluation, if they consider individual differences and different learning styles, if they consider cultural or contextual aspects, if they encourage the activity or participation, the learning connectivity or sequencing and the modular design.

3. **Communication-Interaction.** The third dimension includes aspects related to the implementation, course development and monitoring, and the communicative/tutorial tools of the platforms: forums, blogs, wikis, social nets, hangouts that allow the promotion and development of an active, cooperative and participative methodology. The subfactors that make part of it are Communication and Tutoring.

4. Study scene and research analysis

The study presented belongs to the line of work started with the research developed in the LIC by the Research Group of EduInnovagogía (HUM-971), in which a comparative scene is shown between both instruments of MOOC quality valuation that enlarges its dimensional scope and reduces as much as possible, deficient and null evaluations.

In Figure 2 it can be observed the representation in the space of two quality triangles of MOOC. On the one hand, there is the ideal MOOC orthic triangle of supreme quality that shows an equilateral triangle for tridimensional tools, with the maximum punctuations in all quality dimensions (it cuts the axis at point 1). This ideal triangle receives the name of orthic because it is the maximum surface of quality projection and will serve as a reference to measure the «lack of quality» of MOOC. In this regard, the real quality triangle has also been represented (stripped pattern) of any MOOC in both instruments that makes an intersection with the mentioned axis in points below 1.

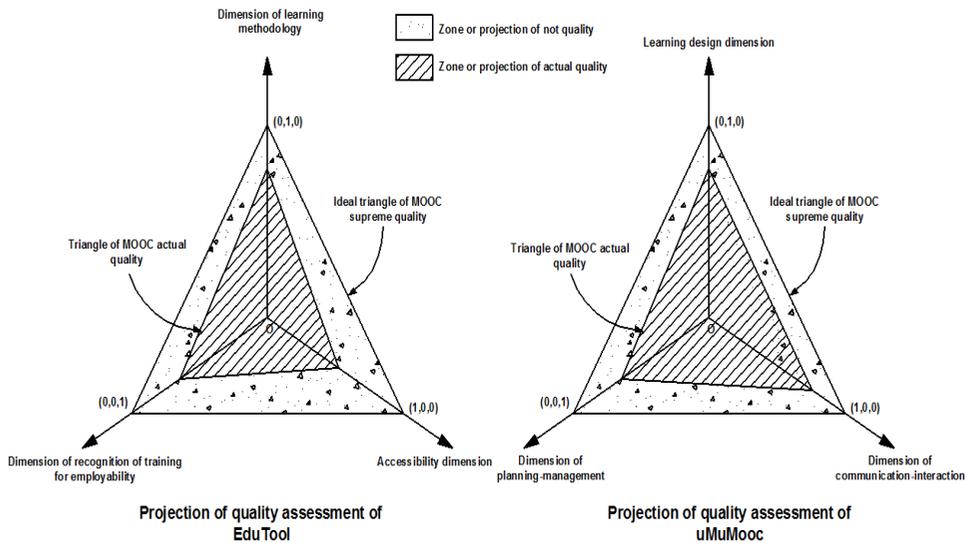


Figure 2. *Isometric representation of quality triangles of the instruments EduTool[®] and uMuMoc. Source: Baldomero Ramírez-Fernández (2016).*

5. Comparative between the evaluation instruments EduTool[®] and uMuMoc

In this study the common indicators of evaluation instruments will be treated as well as the differences of indicators between both tools. In this way, the aim is to carry out an internal analysis of EduTool[®] and uMuMoc to get to know the real situation of both instruments as well as the risks and opportunities that their utilization represents in the evaluation of virtual MOOC.

5.1. Common indicators analysis

It has been taken as a premise the analysis of the common indicators of the subfactors of quality evaluation of EduTool[®] and uMuMoc according to the dimensions of the first. Therefore, in Table 1 the only quality common indicators of the dimension « Acknowledgement of the learning process for employability» and «Learning Methodology» are shown, since there is no other dimension that has common indicators.

Dimension 1: Acknowledgement of the learning process for employability	Indicators
Subfactor 1.1. Acknowledgement of the learning process for employability	The students receive an attendance diploma.
	A certificate is granted to those students who pass an exam of evaluation of acquired knowledge.

	The certificate of knowledge is recognized by the administration or by an external entity of prestige.
	A monitoring process is carried out to the recognition of the learning program.
	The degree or certificate acquired has international validity.
Dimension 2: Learning methodology	Indicators
Subfactor 2.1. Educational-instructional design	General objectives are described.
	Certain degree of freedom in the learning program (in modules, topics and activities).
Subfactor 2.2. Teaching resources and learning activities	The students can carry out self-evaluation activities.
	An educational guide is provided with information about the course (content, methodology and evaluation systems).
	Synchronous sessions are programmed for individual or group work invigorated by the teacher.
Subfactor 2.3. Tutoring	Individual feedback is provided on the work carried out.
Subfactor 2.4. Technological-digital learning environment	It allows or has mechanisms or components that facilitate the students' orientation within the environment and learning process (navigation maps, simple search engines or by tags, options of going back or undo, usable interface, etc.).
	It allows or has forums of debate and students service (formal and informal).

Table 1. *Common quality indicators.* Source: *Baldomero Ramírez-Fernández (2016)*

5.2. Analysis of non-common indicators

The internal analysis of non-common indicators will imply, for the instrument that lacks them, some weaknesses. In this way, these aspects limit the capacity of the effective reach of such dimension that corresponds to the tool in the evaluation of any MOOC. However, they will represent some strengths for the instruments that do have these non-common indicators, and this will suppose an advantage in the capacity of the evaluation dimensional scope, as it is shown in Table 2.

EduTool[®]	
Dimension 2: Learning methodology	Indicators
Subfactor 2.1. Educational-instructional design	General learning objectives are set out.
	Specific learning objectives are set out.
	An identifiable learning method is set out and the activities presented are designed according to it.
	A knowledge evaluation is carried out at the end of the course. This makes it possible to identify the students who have reached the course aims.
	The activities and problems are developed in a realistic context.
	There is an initial knowledge evaluation that makes it possible to give the students information about their concrete learning needs and, after the final evaluation, the knowledge acquired during the course.
	The learning objectives are organized by competences.
	The learning methodology is based on the solution of problems and/or the realization of real projects with direct implication in the society.
	A post-course monitoring is carried out on the level of implementation of what was learnt.
Subfactor 2.2. Teaching resources and learning activities	The teaching resources are only reference material for self-learning.
	The teaching resources allow the interaction among students.
	Instructions are provided for teaching resources use for the learning activities.
	The students must carry out individual or group practical activities that are part of the course plan.
	There is variety in the teaching resources (texts, audios, videos, exercises, simulations) and different interaction models (different activities or exercises typologies, such as multiple choice questions, open questions, putting items in order...; maps or interacting images; hypertext navigation; interactive animations...).
	Complex individual or group activities are proposed (real environment simulations;

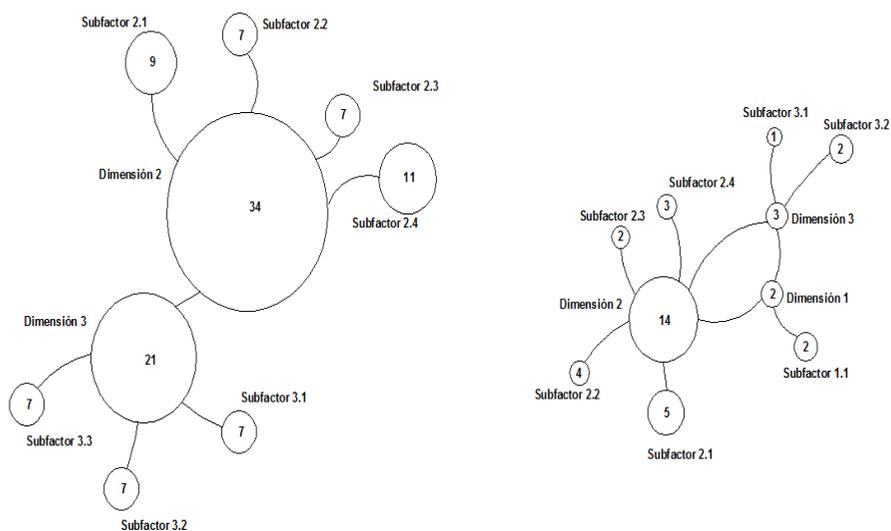
	practical cases of individual correction, cooperative work dynamics...).
	Knowledge management is facilitated (students' contributions, appreciation of those contributions).
Subfactor 2.3. Tutoring	Course tutors respond to the students questions at any time.
	The answers to the students' consultation about course content are given in a pre-established time.
	Existe una programación de contactos que se personalizan en función del avance de los alumnos.
	The tutors monitor both the learning process and the students' improvement.
	The students' evolution is considered based on the progress and the learning indicators that have been set (assessment tests, individual activities, participation in group activities...).
	Personalized and individual monitoring is carried out on the learning process of each student.
	Synchronous sessions of interactions are organized 1 on 1 student-tutor.
Subfactor 2.4. Learning technological-digital environment	There is information available about hardware and software requirements for the students' equipment.
	There is at least one asynchronous communication tool that allows students' interaction.
	There is a learning technological-digital environment that integrates content and communication.
	It incorporates a section of questions (Frequently Asked Questions) and/or Help.
	It makes it possible to manage groups of students and tasks with registers of access and reports.
	It allows or has the possibility of restarting the learning process where the previous session was left (persistence).
	It allows or has repositories for the exchange of digital files among its members.
	It allows or has visual indicators or learning progress.
	It allows the management and reuse of good

	practices in teachers and students.
	It allows the use of different presentation formats based on the learning characteristics and styles.
	It allows or has cooperative or active participation technology (Really Simple Syndication o RSS, wiki, blog, social network...).
Dimension 3: Accessibility levels	Indicators
Subfactor 3.1. Hardware accessibility	All.
Subfactor 3.2. Accesibilidad software	All.
Subfactor 3.3. Web accessibility	All.
uMuMooc	
Dimension 1: Planning/Management	Indicators
Subfactor 1.1. Administration/Management	It has information about the duration, schedule, level of content, diffusion, particular conditions of the course.
	It has asynchronous communication tools.
Dimension 2: Learning design	Indicators
Subfactor 2.1. Educational-instructional design	The content responds to the aims set.
	The evaluation corresponds to the methodology established.
	It has a well selected bibliography, etc.
	The workload for the students is defined and adequate.
	There are different types and level of content according to the students: previous knowledge, characteristics, conditions, abilities, language...
Subfactor 2.2. Content	All.
Subfactor 2.3. Resources and activities	The activities are interesting and innovative, and include additional material, diagrams, summaries and synopsis.
	There are different modalities and types of activities: of reinforcement or support or extension resources (mandatory or optional materials that reinforce the lessons or content); individual or collective.
Subfactor 2.4. Evaluation	It includes partial assessment tests, of each module and global, or the students' progress is verified in other ways.
	Different assessment activities are included: peer evaluation, questionnaires, rubrics, problems...
	New evaluation modalities are included, learning focused evaluation, authentic

	evaluation, training evaluation...
Dimension 3: Communication-Interaction	Indicators
Subfactor 3.1. Communication	They have a facilitator or “content curators”.
Subfactor 3.2. Tutoring	All.

Table 2. *Non-common quality indicators.* Source: Baldomero Ramírez-Fernández (2016)

Figure 3 represents graphically EduTool[®] and uMuMoooc strengths. In order to illustrate it better, the instruments dimensions are presented as intertwined nodes of different sizes. In turn, every dimension is connected to the sub-factors that integrate it. In this way, the strengths of each tool can be represented as a map of dimensions and non-common subfactors. In turn, the number within the node that corresponds to each subfactor represents the non-common indicators of the tool that integrates it and it is proportional to its size. Therefore, the number within the node that corresponds to each dimension represents the non-common indicators of all the subfactors that integrate it and it is also proportional to its dimension.



Representation of dimensions subfactors of EduTool

Representation of dimensions subfactors of uMuMoooc

Figure 3. *Graphic representation of the strengths of the analyzed instruments.* Source: Baldomero Ramírez-Fernández (2016).

In this regard, it can be deduced that the tool EduTool[®] has 34 non-common indicators of the dimension 2 and 21 of the dimension 3. As for the tool uMuMoooc, it has 2 non-common indicators of the dimension 1, 14 of the dimension 2 and 3 of the dimension 3.

6. EvalMOOC: Design of a new quality valuation instrument of MOOC

Once analyzed the strengths of the instruments mentioned above, this study proposes some guidelines of configuration bases of a new instrument that does not imply the deficiencies of the two described previously but does include their strengths. In order to achieve that, the new tool will have to include five dimensions: learning methodology, accessibility levels, planning/management, learning design and communication-interaction. To the three dimensions that make part of the tool uMuMoooc will be added the non-common indicators of the two dimensions of the instrument EduTool[®]. In this way, the possible fourth and fifth dimensions are added by the educational progression axis «learning methodology» and «accessibility levels» of this last instrument, that contains very few common indicators with uMuMoooc, and this implies two new key efficiency factors in the configuration of new tools that include the common dimension «acknowledgement of the learning process for employability». In Figure 4 this design construct of future quality evaluation instruments of the MOOC is shown as a five-vertex pyramid or pentadimensional representation. In the gravity centre is placed the “acknowledgement of the learning process for employability” and some indicators of the “learning methodology”. From this solid base, the evaluation tools will have to be configured considering the five dimensions expressed in the representation.

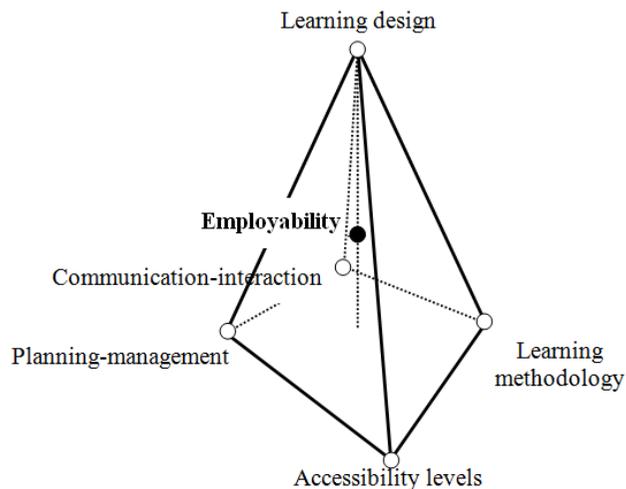


Figure 4. *Pentadimensional representation of the future instruments of quality valuation of MOOC.* Source: Baldomero Ramírez-Fernández (2016)

Based on the previous considerations, in Table 3 it is shown the possible configuration of EvalMOOC, a new quality evaluation tool of the MOOC. This instrument will have to consider a base of common quality indicators (Table 1), the pentadimensional configuration of the pyramid (Figure 4) and the sub-factors or axis of non-common indicators progression (Table 2).

Common Quality Indicators				
Dimension 1: Acknowledgement of the learning process for employability (tool EduTool®)				
All the indicators				
Dimension 2: Learning Methodology (tool EduTool®)				
Partial indicators in the subfactors:				
Subfactor 2.1	Subfactor 2.2	Subfactor 2.3	Subfactor 2.4	
Pentadimensional Configuration Of Non-Common Indicators				
Dimension 2: Learning methodology (tool EduTool®) Partial indicators in the sub-factors:	Dimension 3: Accessibility levels (tool EduTool®) Partial indicators in the sub-factors:	Dimension 1: Planning/Management (tool uMuMOOC) Partial indicators in the sub-factor:	Dimension 2: Design/Learning (tool uMuMOOC) Partial indicators in the sub-factors:	Dimension 3: Communication/Interaction (tool uMuMOOC) Partial indicators in the sub-factors:
Subfactor 2.1	Subfactor 3.1	Subfactor 1.1	Subfactor 2.1	Subfactor 3.1
Subfactor 2.2	Subfactor 3.2		Subfactor 2.2	Subfactor 3.2
Subfactor 2.3	Subfactor 3.3		Subfactor 2.3	
Subfactor 2.4			Subfactor 2.4	

Table 3. Bases for the design of EvalMOOC as a new tool for MOOC quality evaluation. Source: Baldomero Ramírez-Fernández (2016)

7. Discussion and conclusions

This study adjusts the differences between EduTool® standards and the indicators of the instrument uMuMOOC to the learning program evaluation of MOOC in a more efficient way and aiming to represent a new visual and analytical scene for the design of new tools that reduce the weaknesses of the current ones that were analyzed. In this regard, the research has been concluded with vital importance of the dimension of “acknowledgement of the learning process for employability” and some aspects of the “learning methodology” that quality valuation instruments of MOOC must have. In this

same line, and based on such dimension, it appears obvious the necessity of a pentadimensional tool, called EvalMOOC, based on the following axis:

1. Acknowledgement of the learning process for employability.
2. Learning Methodology.
3. Planning/Management.
4. Learning Design.
5. Communication-Interaction.

In this way, it appears necessary to carry out future research about the design of new modular and multidisciplinary instruments that use a multimethod, mixed, eclectic, holistic, systemic and conciliatory approach, overcoming the methodological monism and quantitative/qualitative polarity to come together in the dialectical symbiosis of both perspectives in an strategy of knowledge complementarity and convergence and integral analysis of the phenomenon object of study. Therefore, prospective observatories about the future of MOOC, such as it could be the International Observatory OCIMOOC[®], the only existent in the world with these characteristics, with valid trademark (OEPM): 3530108 and URL: <http://ocimooc.eu/> (under construction), could combine the dimensions of this new scene under study. Following the same line, each of the five dimensions to be considered would become endorsed and more reliable and the quality level of the courses offered could be certified in an efficient way in advance, both on a qualitative and quantitative basis and mainly considering the acknowledgement of the learning process for employability and the learning methodology aspects considered.

Through all that, the offering platforms could be recognized with certified MOOC courses and avoid the offer of learning programs with weaknesses in their learning methodologies that could be considered not appropriate according to the current pedagogical theories (Valverde, 2014) and preventing, to the extent possible, the tendency to the standarization of knowledge and the serious problems to meet the individual differences due to the massification that leads to a unidirectional communicative design, teacher-centered and content-based. Therefore, the MOOC could be shown as a democratization of higher education but giving priority to the pedagogical interests instead of the economical ones based on unreliable evaluation methods.

In any case, the quality valuation of the MOOC is a future line of research and it also appears necessary a higher number of studies about some quality indicators in online courses, as well as linear (Stödberg, 2012) or comparative studies (Balfour, 2013). And, more specifically, it would be important to continue researching in order to provide an answer to questions about methods that improve the reliability, validity, authenticity and safety of the students evaluation, or about techniques that offer an efficient automatized

evaluation and systems of immediate feedback; and how they could be integrated in open learning environments (Oncu and Cakir, 2011), to give more usability guarantee to the quality pentadimensional tools that may be developed from this work and to the future trial of MOOC relevant platforms.

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