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# Impacto del fenómeno MOOC: la personalización en la educación superior

## *MOOC phenomenon impact: Personalization in higher education*

## *Impacto do fenômeno MOOC: personalização no ensino superior*

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## Resumen

Desde su aparición en 2008, los cursos en línea masivos y abiertos (MOOC, por sus siglas en inglés) llegaron a ser catalogados como un fenómeno con alto impacto en la educación universitaria; sin embargo, a través de los años se ha hecho evidente que la concepción inicial de estos ha sufrido transformaciones. Los MOOC se encuentran en plena evolución y su creciente diversificación muestra un alejamiento de la noción de masivo. Este trabajo presenta resultados preliminares de una investigación en curso, basada en la Metodología de la Teoría Fundamentada. A partir del análisis de datos cualitativos, fue posible identificar las categorías de un MOOC personalizable y cómo se ha reflejado este concepto en la educación superior, desde la experiencia y perspectiva de usuarios que ya han sido consumidores y/o productores de este tipo de cursos. Los datos sugieren que, los usuarios de MOOC experimentan cuatro fases: Consumo indiscriminado, Discriminación inteligente, Tropicalización y Personalización. En instituciones de educación superior, los MOOC están siendo utilizados como estrategia para resolver problemas específicos: semestre cero, complemento a clases presenciales, divulgación, entre otros. La diversificación que

están sufriendo los MOOC pone en evidencia la necesidad de un alejamiento de la noción de *masivo*. Pensar en proponer metodologías para el diseño de MOOC que vayan *de lo masivo* a *lo personalizable* facilitará la producción de MOOC para atender necesidades de grupos de usuarios específicos en contextos educativos con objetivos particulares.

**Palabras clave:** técnicas cualitativas, teoría fundamentada, MOOC, Massive Open Online Course, educación en línea, educación superior.

## Abstract

Since its appearance in 2008, Massive Open Online Courses (MOOC) have come to be classified as a phenomenon with a high impact on university education; however, over the years it has become evident that the initial conception of these has undergone transformations. The MOOC are in full evolution and their increasing diversification shows a departure from the notion of mass. Preliminary results of an ongoing research, based on Grounded Theory Methodology is presented in this paper. From qualitative data analyzed, was possible to identify the categories of a customizable MOOC and how this concept has been reflected in higher education, from the experience and perspective of consumers users and / or courses producers. The data suggest that MOOC users experience four phases: Indiscriminate Consumption, Intelligent Discrimination, Tropicalization, and Personalization. In higher education institutions, MOOC are being used as a strategy to solve specific problems: zero semester, classroom complement, diffusion, among others. The MOOC diversification highlights the need to move away from the mass notion. To think about proposing methodologies for the MOOC design going from the massive to the personalizable, will facilitate the MOOC production meeting needs of specific users groups in educational contexts with particular objectives.

**Key words:** Qualitative Techniques, Grounded Theory, MOOC, Open Massive Online Course, Online Education, Higher Education.

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## Resumo

Desde a sua criação em 2008, os cursos on-line em massa e abertos (MOOCs) passaram a ser considerados um fenômeno com alto impacto na educação universitária; No entanto, ao longo dos anos tornou-se evidente que a concepção inicial destes sofreu transformações. Os MOOCs estão em plena evolução e sua crescente diversificação mostra um desvio da noção de massa. Este artigo apresenta os resultados preliminares de uma pesquisa em andamento, baseada na teoria da teoria fundamentada. A partir da análise de dados qualitativos, foi possível identificar as categorias de um MOOC personalizável e como esse conceito se refletiu no ensino superior, a partir da experiência e perspectiva dos usuários que já foram consumidores e / ou produtores deste tipo de cursos . Os dados sugerem que os usuários do MOOC experimentam quatro fases: Consumo Indiscriminado, Discriminação Inteligente, Tropicalização e Personalização. Nas instituições de ensino superior, os MOOCs estão sendo usados como uma estratégia para resolver problemas específicos: semestre zero, complemento a aulas presenciais, disseminação, entre outros. A diversificação dos MOOCs destaca a necessidade de se afastar da noção de massa. Pensar em propor metodologias para o design do MOOC que vão do maciço ao personalizável facilitarão a produção do MOOC para atender às necessidades de grupos específicos de usuários em contextos educacionais com objetivos específicos.

**Palavras-chave:** técnicas qualitativas, teoria fundamentada, MOOC, Massive Open Online Course, educação on-line, ensino superior.

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## 1. Introduction

Since its inception, the goal of MOOCs has been to allow thousands of users free access to educational content based on Web 2.0 SCOPEO (2013) applications. However, these courses have undergone transformations that, paradoxically, now point to a contradiction in terms (Dolan, 2014, Karsenti, 2013): they are not always free, due to the high dropout rate of their users (approximately 80%), there are serious doubts that they are useful for educational purposes and, according to the preliminary results of this research, are leaving aside the notion of mass.

Regardless of the position adopted regarding the MOOC, it is a fact that has not been as expected (Clarke, 2013). An example of this can be seen in the proposal of the company Gartner on the positioning of the MOOC in the years 2012, 2013 and 2014, which shows that the admission of any technology is not stable and goes through different phases or moments tagged as: Technology Launch, Exceptional Oversized Peak, Dissolution Abyss, Consolidation Ramp, and Productivity Plateau. Figure 1 shows the passage of the MOOCs through the different phases. It can be observed that the initial expectations regarding the MOOCs have gradually been lost. This decline in expectations can also be seen in what The New York Times has published about it. In 2012, this newspaper published an article entitled "The year of the MOOC" and, two years later, the article whose headline was "Demystifying the MOOC" (Vázquez-Cano, 2015).

**Figure 1.** Hipérico de Gartner sobre posicionamiento de los MOOC.


Source: elaboración propia basada en Vázquez-Cano (2015, p. 53).

In its report, SCOPEO (2013) considers that, in the conception of MOOCs, its mass nature is linked to ideas such as: unlimited enrollment, technological support, useful courses, democratization of knowledge, reaching as many people as possible be complicated content. However, although the institutions that are designing this type of courses seek to meet these characteristics, the expectations of the users are not reached and the abandonment is still present.

In the analysis by Liyanagunawardena, Adams, & Williams (2013) it is shown that exploring the strategies used by students who continue to actively participate in a MOOC could influence possible solutions to the overload of information in a MOOC, both for other students and for MOOC researchers.

It is recognized that MOOCs have high dropout rates, however, there is very little knowledge about the experiences of participants who did not complete a MOOC, which would be interesting and useful to explore in future research. Likewise, motivation is identified as an important contributor to student engagement in a MOOC. However, it has not yet been explored why people participate in MOOC (Liyanagunawardena et al., 2013).

Chiappe-Laverde, Hine, & Martínez-Silva (2015) emphasize the importance of the complete meaning of the acronym MOOC, to design a course consistent with its principles. Of the four letters that compose to him:

- The first O (open / open) is possibly the most important to understand its meaning and implications.
- C (course / course) makes an interesting difference with other distributed learning models. Being a course makes it different from the video tutorials of self-learning and free access available through the Internet. A course not only has a clear pedagogical intentionality, but also provides a certain curricular structure to achieve its educational goals. This structure is constituted by certain elements (people, resources, content, evaluation, feedback, spaces of interaction, etc.). All of the above is part of a MOOC, but manifested in a very different way from traditional e-learning experiences.
- The second O (online / online) indicates that the entire learning experience is done through the Internet.

- The M (massive / mass) seems the most popular feature of this concept, but it is perhaps the most circumstantial. It is one of the components that identify you, but it may or may not be present. This means that a mass course can be designed, designed and implemented to serve a very large group of students, but the number of students is due to factors beyond their design, such as those related to course marketing and their visibility. That is, a MOOC is massive, not because it has many students, but because its design has been thought to have many students.

According to EduTrends (2014), MOOCs have evolved and diversified, so that six types of MOOCs could now be considered. XMOOCs (the most common MOOC model) are offered through commercial platforms, with an emphasis on traditional video-centric learning and exam-type exercises. The cMOOC or MOOC connectivity focuses on the creation of knowledge on the part of the students, in the creativity, the autonomy and the social and collaborative learning. In DOCC or Collaborative Courses Distributed Online, the material is distributed among students from different institutions. At BOOC or Open-Scale Online Courses, the course is limited to a number of participants (usually no more than fifty). In the sMOC or Massive and Simultaneous Online Courses the classes are transmitted live. SPOCs or Small Online and Private Courses use the same infrastructure as MOOCs, although their scope is not massive, they can include closed elements in their contents and have a limit of participants with student-teacher interactions based on the conventional classroom model.

The growing difference between the concept of MOOC, defined from its acronym, the principles explored in the literature and the offer of this type of courses is notorious. This is characterized by practices that are not based on the pedagogies on which the MOOCs were designed, which puts students at risk of successful experiences. Possibly, somehow, this idea explains the alarming rates of desertion known and is the red focus that shows the urgent need to review the practices associated with this type of courses.

Clarke (2013) in his work analyzes the rapid development of massive open online courses and explores the responses of universities on the subject. It concludes that MOOCs have considerable growth potential with university products, but they still need to solve certain problems, such as evaluation, high school drop-out rates and how to maintain viability. It emphasizes that MOOCs remain at a developmental stage, and it is still unclear whether their growth trajectories will be as ambitious as anticipated, but they are a definite advance on previous eLearning systems, and are worthy of further research on your performance.

In his paper Ospina-Delgado, Zorio-Grima, & García-Benau (2016) analyze the factors that influence the level of supply of MOOC in universities. The findings suggest relevant aspects for innovation policies in university education, since universities must make strategic decisions in a competitive environment that affects their institutional philosophy. The literature analyzed by these authors reflects the researchers' concern about the way in which universities must respond to the challenges that require new educational models. The MOOC, as a new virtual education scenario, are a fundamental part of the academic debate about the present and future of the university and represent challenges for educational communities.

Ospina-Delgado et al. (2016) demonstrate the desirability of conducting comparative studies in the future to analyze the changes in the MOOC offer over time and to understand how the universities of the world are inserted in this global trend of openness and massiveness of higher education, leaving in the air the question of whether universities respond equally to the innovation needs of networked teaching or will bet on some kind of specialization.

Considering that the MOOCs are massive by definition, some ideas from Castells (1997) regarding television may be taken up. We moved from mass communication to segmentation, personalization and individualization, from the moment technology, companies and institutions allowed these changes. The new media determined a segmented and differentiated audience that, although massive in number, was no longer mass in terms of the simultaneity and uniformity of the message they received. The media ceased to be mass media in the traditional sense of sending messages to a homogeneous mass audience. Due to the multiplicity of messages and sources, the audience

became more selective and the media came to select the audience. In the new media system, the message was the medium. Decentralization, diversification and customization came to the television.

In Baro (2013), the two-step flow theory of Lazarsfeld and Katz aims to explain how information is transmitted through the mass media and how the public reacts to this information. This theory proposes a communication system with two stages or phases. In the first phase the media transmit their information to representative figures of the population (called opinion leaders), who will receive the information directly, then analyze, process and refine it. In the second phase, opinion leaders transmit the information already processed to their respective social spheres, who adopt them as their own and use them in terms of what the opinion leader has given them as context. That is, the audience ceases to be a homogeneous mass, each member has characteristics that make it different and, therefore, their behavior may be different, depending on their personality. Individuals will be exposed to media messages based on their personal interests and predispositions.

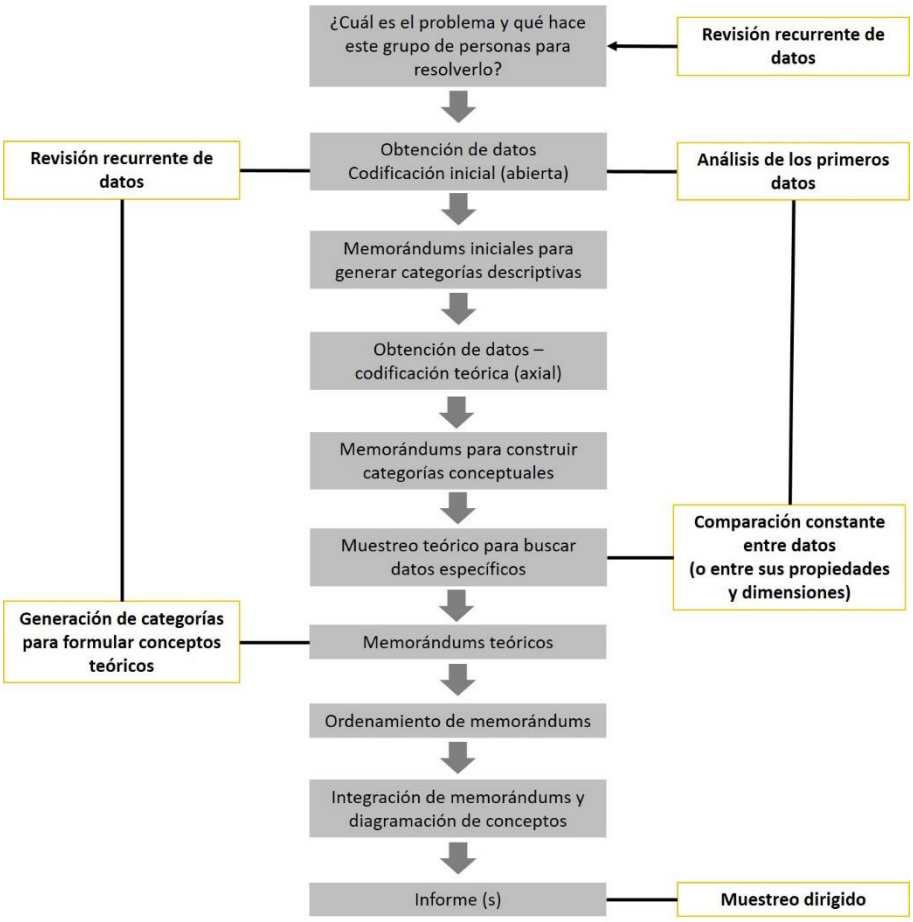
When talking about a MOOC, when it is something that is labeled as massive, something is happening very similar to what Castells (1997) identified in relation to the evolution of television; the MOOC participants are not receiving that global message intact nor are they interpreting it in the same way.

Results of research on mass and open online courses show the need to explore the strategies and motivation of MOOC users (Liyanagunawardena et al., 2013), as well as to know how universities are responding to challenge that represents the insertion of this type of courses (Ospina-Delgado et al., 2016). Based on the analysis of qualitative data, this research aimed to analyze the categories of a customizable MOOC and how this concept has been reflected in higher education, from the experience and perspective of users who have already been consumers and / or MOOC producers.

## 2. Method

Unlike the investigations conducted with a hypothetical-deductive logic, the Grounded Theory initiates the collection of data in the field of study and gradually constructs the analytical categories through processes of codification of the obtained data (Escudero & Núñez, 2016 ) (see Figure 2).

**Figure 2.** Procedimiento de investigación de la Teoría Fundamentada




Source: elaboración propia basada en Escudero & Núñez (2016, p. 19).

Being a grounded theory study, the research was started with general questions, not with a hypothesis. In this case, in a first stage of the research was to know about the experiences of the users of a MOOC, having as guiding questions the following: why did you decide to enroll in a MOOC ?, what did you think of the courses you have taken What has been your experience with MOOCs? The questions in the next stages of the research (see Table 2, Table 11 and Table 13)

emerged from the experience and reflecting on the information obtained. Likewise, the following sources of information were defined through the questions (see Table 2) and the way of transforming the information obtained into data. The characteristics or attributes of the object of research study (the variables) arose from the analysis of the data obtained.

The Grounded Theory performs the literary review after having obtained the theoretical notions based on the data. This allows for a theoretical discussion and a critique of existing theory from the results obtained after independent analysis. The review of the literature is generally done at the end of the research with the intention of contrasting the theoretical notions available in the field of study with the new results obtained; or during research, to encourage theoretical saturation.

The process of obtaining data and coding was done simultaneously. Although the most common ways to obtain information in Grounded Theory are in-depth interviews and observation; this methodology accepts that "everything is data" (Glaser, 1998, p.8). In addition to in-depth interviews, other sources of information during the research were the MOOC panels conducted by EDUTEC and CIIDET in 2016 (see Table 2). The transformation of information into data was done through a coding process, which consisted of selecting a piece of information and assigning it a category.

In the Grounded Theory the codification is carried out simultaneously to the obtaining of information and from the first moment. That is, as soon as the first data are obtained, the first encodings are immediately made, which will be modified as soon as more data are obtained. Because of the above, coding is a recursive process. The relationship between the categories that are attached to the pieces of information, and the meaning that is given to each category is called code (Escudero & Núñez, 2016).

The construction of codes and categories is done in an inductive way, that is, they arise as a result of expressions that the interviewees say (live codes) or as a concept that the researcher constructs in the context of the study (socially constructed code) (Glaser, 1978) and not from preconceived conceptual categories.

Codify is to transform all the raw information produced by observations, interviews, documentary collection, immersion processes and any other type of interaction, into significant data for the phenomenon in question. Codification in Grounded Theory is a process that, well done, distills relevant data, sorts them, classifies them, and offers a possibility to handle them to make comparisons with other data segments (Escudero & Núñez, 2016).

The process of giving meanings to categories is a delicate process because it involves putting into play the interpretation of the researcher. With the intention of having some control over the construction of codes, it is suggested to take notes and write texts in a spontaneous and constant way throughout the investigation. These texts are called "memorandums" and contain information regarding the date the annotation was made, from which category the annotation was made, what new questions it caused, what ideas emerged or what incipient relation is perceived between the category, its properties and dimensions (Charmaz, 2014). The proposed format for the memoranda prepared during the research is shown in Table 1.

**Table 1.** Formato de memorándum.

| | |
|---|---|
| Memorándum: | **[identificador del memorándum]** Código: ***[categoría]*** |
| **[Anotaciones respecto a la categoría, resultantes de las entrevistas en profundidad]** | |
| Acción: | [Nuevas preguntas o ideas que surgen de la categoría] |

Source: elaboración propia.

When the level of conceptualization became more abstract, the elaborate memoranda had another crucial function: they allowed to identify where and how to obtain more information to compare the codes and know when to stop the research process because the categories have been theoretically saturated.

The process to achieve increasingly conceptual levels is usually performed with three types of coding: open coding, axial coding and theoretical coding. Open coding refers to "opening the text", that is, the field of study; the axial one aims to order all the categories built around a central category; and the theoretical coding is the discussion that the study maintains with previous

research, based on the results obtained. Annex A (https://www.dropbox.com/s/zu1j3x73h4y7cbc/Anexo%20A%20Codificacipon%20abierta.pdf?dl=0) includes blocks of information tagged with a category and the memoranda prepared during the investigation.

The generation of memorandums to construct categories entails raising the data to a level of abstraction to identify its properties and dimensions, and to formulate hypotheses about the relationship between emerging conceptual categories and between the central category (Escudero & Núñez, 2016 ).

Since Grounded Theory aims to construct an analytical category, it is guided by theoretical sampling, rather than by representative sampling (Glaser & Strauss, 1967). The theoretical sampling aims at the construction of a theory of average rank. Although the information and experiences of the people consulted are taken into account, it is not the ultimate goal to describe such opinions in context, but rather an abstract theoretical understanding of a limited studied experience. That is to say, although it is not intended to universalize explanations to a level of formal theory, nor to explain all similar social phenomena, it is possible that the results of the study serve to saturate other categories of studies that address the same subject.

## 3. Results

During the investigation, the data were obtained from three sources combining several techniques. Table 2 shows the sources of information and the technique used to obtain data.

**Table 2.** Fuentes de información para la obtención de datos.

| Fuente de información | Técnica utilizada |
|---|---|
| **Docentes de educación superior pertenecientes al Tecnológico Nacional de México (TecNM)** | Entrevistas en profundidad |
| **Panel titulado Educación Superior en tiempos de MOOC: oportunidades, retos y tendencias del e-learning en el XIX Congreso Internacional Educación y Tecnología (EDUTEC, 2016a)** | Análisis documental<br>Entrevista semiestructurada |
| **Panel sobre elaboración de MOOC, en el Congreso CIIDET 2016 Investigación, desarrollo e innovación educativa (CIIDET, 2016).** | Análisis documental<br>Entrevista semiestructurada |

Source: elaboración propia.

The TecNM is a decentralized body of the Secretariat of Public Education in Mexico. It is made up of 266 institutions: 126 are Federal Technology Institutes, 134 Decentralized Technological Institutes, four Regional Centers for Optimization and Equipment Development (CRODE), an Interdisciplinary Center for Research and Teaching in Technical Education (CIIDET) and a National Center for Research and Technological Development (CENIDET). With 26,879 teachers, TecNM serves a school population of more than 520,000 undergraduate and graduate students throughout the country, making it the largest subsystem of higher technological education in the country (TecNM, 2014). ).

The XIX International Congress EDUTEC 2016 is an initiative of EDUTEC (Association for the Development of Educational Technology and New Technologies applied to education), under the auspices of the University of Alicante, specifically the research group EDUTIC-ADEI and the Department of General Didactics and Specific Didactics of the Faculty of Education. The Congress was a meeting point for international professionals specializing in training, research and / or innovation in the field of Educational Technology, having as main objective to present the latest advances in this subject (EDUTEC, 2016b).

The CIIDET 2016 Congress Research, Development and Educational Innovation, aimed to be a forum for analysis, reflection and dissemination of proposals for the improvement and innovation of technology education in specific and in general, of any other type and modality (CIIDET, 2016).

According to the Grounded Theory, data collection and analysis is performed simultaneously. This simultaneous and repetitive process, however, distinguishes two phases: 1) open coding to identify the categories and 2) axial coding to establish relationships between the open coding categories.

The study began with general questions to teachers, who have already been users of MOOC, regarding their motivation to enroll and experience as participants in this type of courses. As a result of the first approach, it became evident the need to go deeper into the subject, in such a way that it was possible to reach the saturation of the built categories.

In the Grounded Theory, theoretical saturation is the instant that reveals to the researcher that the time has come to stop constant comparison and theoretical sampling. In order to discover or construct categories and to relate them to each other, during the investigation it was necessary to obtain information from several sources, produce data and assign them a conceptual explanation; this process was recursive, but finite. It stopped when all categories were theoretically saturated, that is, when the information obtained no longer offered new properties, nor new dimensions to categories.

### 3.1 Open coding

The first step in conducting open coding was the transcription of in-depth interviews and forums, as sources of information in the research. The resulting categories acquired meaning from the interpretation of the qualitative data obtained. Notes were taken throughout the research in memoranda, which contained information regarding the date the annotation was made, from which code it was formulated, what ideas emerged in relation to it, and what actions should be taken later. The codes identified in the memoranda gave rise to the categories. Live codes are shown in quotation marks.

Table 3 shows the first in-depth interview script. Table 4 shows an example of the memos made from the codes identified from the analysis of the data.

**Table 3.** Guion de entrevista en profundidad del ámbito Experiencia en un MOOC.

| Ámbito | Pregunta(s) |
|---|---|
| **Experiencia en un MOOC** | ¿Por qué decidió matricularse en un MOOC? |
| | ¿Qué le han parecido los cursos que ha tomado? |
| | ¿Cuál ha sido su experiencia con los MOOC? |

Source: elaboración propia.

**Table 4.** Ejemplo de memorándum del código tiempo.

| | | | |
|---|---|---|---|
| Memorándum: | **14/090916-2** | Código: | ***Tiempo*** |
| **Un MOOC personalizable para un docente es aquel en el que es posible elegir cuándo tomarlo. En este caso, los periodos inter semestrales son los ideales, ya que es cuando se dispone de tiempo para dedicarlo a la capacitación.** | | | |
| **Asimismo, no solo es importante el momento en que pueda ser tomado un MOOC, sino el tiempo de duración de este.** | | | |
| Acción: | Preguntar: ¿Qué tipo de capacitación requiere un docente? | | |

Source: elaboración propia.

As a result of the participants' first interview, in relation to their approach to the MOOCs, there were more concerns regarding their experience in this type of course. Specifically, the fact that an interviewee considered these courses to be confusing seemed interesting, as it did not seem to fit the idea that whoever enrolled in a MOOC would find something simple. Also, another element that seemed to be very important (at different times), for interviewees, was time. Looking for a closer look at the interviewees' experience, it was important to have a second interview with an interviewee who said that they had taken a MOOC and concluded it; it was definitely essential to talk more about it and to deepen in relation to their experience in the course. It would be interesting

to know why he enrolled in a MOOC, what problems he had during the course and what he did to achieve it.

From the analysis of the data obtained in the first in-depth interviews, the properties of the categories that were relevant to the research were identified and described: motivation, expectations, time and disciplinary knowledge.

Considering as a category the "Motivation", Table 5 shows the properties of this category, describing in what sense, the people who register in a MOOC do it mainly by access, out of curiosity, to find something, to know , to learn, by necessity or simply to fulfill. This coincides with Liyanagunawardena et al. (2013), since they identify motivation as an important contributor to student engagement in a MOOC. In relation to the category "Expectations", Table 6 shows the materials, communication and evaluation as properties of this category. In Table 7 the properties of the "Time" category are integrated, these being the wrong perception of time and being aware of time. For Xiao & Pardamean (2016), time can be considered as an indicator from which designers can adjust the learning duration, material and difficulty level of a course material. The properties of the category called "Disciplinary Knowledge", which would be without prior disciplinary knowledge and with prior disciplinary knowledge, are shown in Table 8.

For their part, Gašević, Kovanović, Joksimović and Siemens (2014) share results that reveal research topics that could form a framework for future MOOC research, including: commitment and success of student learning, design and curriculum of the MOOC and the criteria of motivation, attitude and success.

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**Table 5.** Codificación abierta de la categoría Motivación.

| Categoría | Propiedades |
|---|---|
| **Motivación** | Acceso (Al recurso) |
| | Curiosidad (Saber de qué se trata) |
| | Encontrar (Material / Asesoría) |
| | Conocer (Diseño, Estructura) |
| | Aprender (Nueva tecnología / Tema necesario / Tema nuevo / Tema específico / Profundizar en un tema) |
| | Necesidad (Capacitación, Actualización, Conocimiento) |
| | Cumplir (Capacitación, Actualización) |

Source: elaboración propia.

**Table 6.** Codificación abierta de la categoría Expectativas.

| Categoría | Propiedades |
|---|---|
| **Expectativas** | Materiales |
| | Comunicación |
| | Evaluación |

Source: elaboración propia.

**Table 7.** Codificación abierta de la categoría Tiempo

| Categoría | Propiedades |
|---|---|
| **Tiempo** | Percepción errónea del tiempo (Elige cualquier curso, No le importa el periodo del curso, Se matricula en el curso, No se programa para tomar el curso) |
| | Consciente de su tiempo (Elige un curso de interés, Pone atención en el periodo del curso, Se matricula en el curso, Se programa para tomar el curso) |

Source: elaboración propia.

**Table 8.** Codificación abierta de la categoría Conocimiento Disciplinar.

| Categoría | Propiedades |
|---|---|
| **Conocimiento disciplinar** | Sin conocimiento disciplinar previo |
| | Con conocimiento disciplinar previo |

Source: elaboración propia.

In-depth interviews were conducted with users, seeking to identify which elements they considered to be determinant in order to be able to say that a MOOC was customizable. Table 9 shows the in-depth interview script for the Personalizable MOOC scope. Table 10 lists the categories resulting from the open coding of the Personalizable MOOC scope.

**Table 9.** Guion de entrevista en profundidad del ámbito MOOC Personalizable.

| Ámbito | Pregunta(s) |
|---|---|
| **MOOC Personalizable** | ¿Cómo sería para usted un MOOC personalizable? |

Source: elaboración propia.

As a teacher, having a customizable course implies being able to take from this only what is useful, that is, to select the topics that interest you or need to have a course of your own that suits your academic needs. A customizable MOOC is one in which it is possible to choose when to take it. In this case, inter-semester periods are the ideal, since it is when time is available to dedicate to training. Also, it is not only important when a MOOC can be taken, but the duration of it.

When talking about personalization in a MOOC, as a teacher it is important to have some certainty of the content of the course, since in this way it will be possible to select the topics that will be useful to put together a course of your own that suits your academic needs. A MOOC that is cataloged as personalizable must specify what topics the participant must know so that the participant can determine if it is a course that fits in his profile or not before deciding to take it and in this way will have a greater certainty of what awaits him.

One teacher interviewed said he finished a course without losing interest, thanks to the social component. It considers that the social was very related to the personalizable, since, being able to deal with other students in forums, groups, and even social networks, did not lose interest and learned about some aspects that went beyond the course.

**Table 10.** Codificación abierta del ámbito MOOC Personalizable.

| |
|---|
| *Pregunta(s):* ¿Cómo sería para usted un MOOC personalizable? |
| Categorías |
| **1. "Selección de temas"**<br>**2. Tiempo**<br>**3. "Especificar contenido"**<br>**4. Conocimientos previos**<br>**5. Herramientas de interacción** |

Source: elaboración propia.

Seeking to find more categories of interest to try to understand how the phase of customization is being given in the MOOCs being used by universities, the next step in the research was the analysis information coming from the aforementioned panels.

Table 11 shows the question script in the Panel of experts EDUTEC 2016. Table 12 shows the list of the categories obtained from open coding of the scope MOOC in higher education. Table 13 shows the questionnaire elaboration of MOOC CIIDET 2016 and Table 14 contains the list of categories resulting from the open coding of the scope of MOOC elaboration in the TecNM.

**Table 11.** Guion de preguntas Panel de expertos EDUTEC 2016.

| Ámbito | Pregunta(s) |
|---|---|
| **MOOC en la educación superior** | ¿Qué ha aportado el fenómeno MOOC a las universidades y en qué ha contribuido a la educación superior? |

Source: elaboración propia.

**Table 12.** Codificación abierta del ámbito MOOC en la educación superior.

| |
|---|
| *Pregunta(s):* **¿Qué ha aportado el fenómeno MOOC a las universidades y en qué ha contribuido a la educación superior?** |
| Categorías |
| 1. **"Planificación"**<br>2. **"Estudio de intereses"**<br>3. **"Metodología"**<br>4. **"MOOC para aprendizajes informales"**<br>5. **"MOOC para divulgación"**<br>6. **"MOOC para formación continua"**<br>7. **MOOC como complemento a clases presenciales**<br>8. **MOOC como curso de nivelación**<br>9. **Personalización institucional**<br>10. **Compartir experiencias institucionales**<br>11. **Necesidad como motivación**<br>12. **Equipo de trabajo** |

Source: elaboración propia.

**Table 13.** Guion de preguntas Panel elaboración de MOOC CIIDET 2016.

| Ámbito | Pregunta(s) |
|---|---|
| **Elaboración de MOOC en el TecNM** | ¿Qué tipo de MOOC es el más acertado para el TecNM? |

Source: elaboración propia.

**Table 14.** Codificación abierta del ámbito elaboración de MOOC en el TecNM.

| Pregunta(s): **¿Qué tipo de MOOC es el más acertado para el TecNM?** |
|---|
| Categorías |
| 1. **"Duración del curso"** |
| 2. **"Temática"** |
| 3. **Perfil del participante** |
| 4. **"Diseño de MOOC"** |
| 5. **"MOOC como complemento a clases presenciales"** |
| 6. **Necesidad como motivación** |
| 7. **Colaboración institucional** |
| 8. **"Equipo de trabajo"** |
| 9. **"Duración de videos"** |
| 10. **Experiencia institucional** |

Source: elaboración propia.

### 3.2. Axial encoding

Through axial coding it was possible to establish relationships between the resulting categories of open coding.

Users of a MOOC have an initial motivation to enroll, which can range from just being curious to wanting to meet a need. In addition, they have expectations regarding content, communication and evaluation in the course. In their research, Castaño Garrido, Maiz Olazabalaga, & Garay Ruiz (2015) conclude that the design of a MOOC, defined by an intensive use of social networks and student activities, influences performance, and is the satisfaction with the perception of the design the variable that mediates in that relation. Time is also important and being aware of the time (in terms of user availability, course duration and review of materials) is ideal. Disciplinary knowledge is necessary. The user of a MOOC will have a better chance of completing it successfully as the value of the categories motivation, expectations, time and disciplinary knowledge is closer to the center (see Figure 3).

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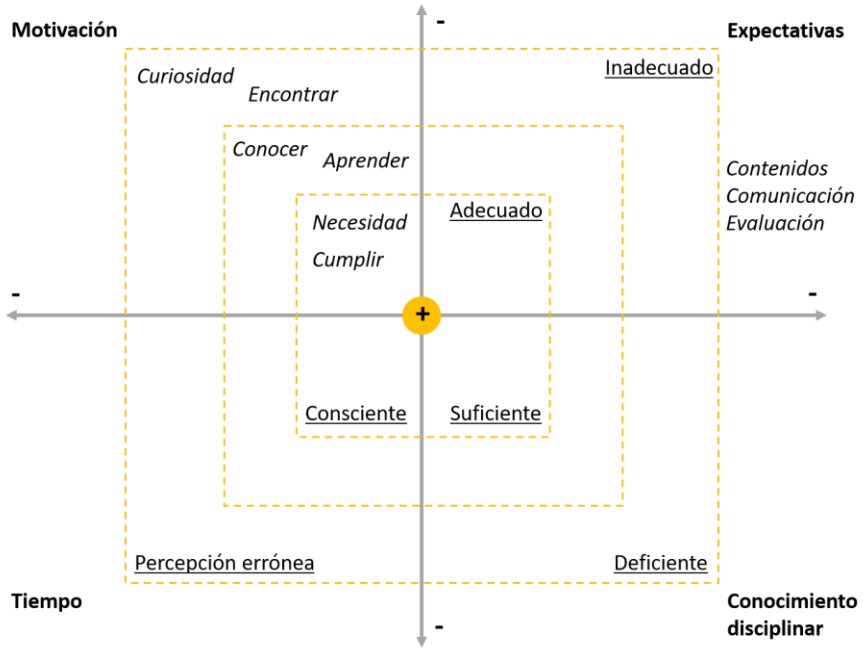
**Figure 3.** Codificación axial de la experiencia como usuario de un MOOC.



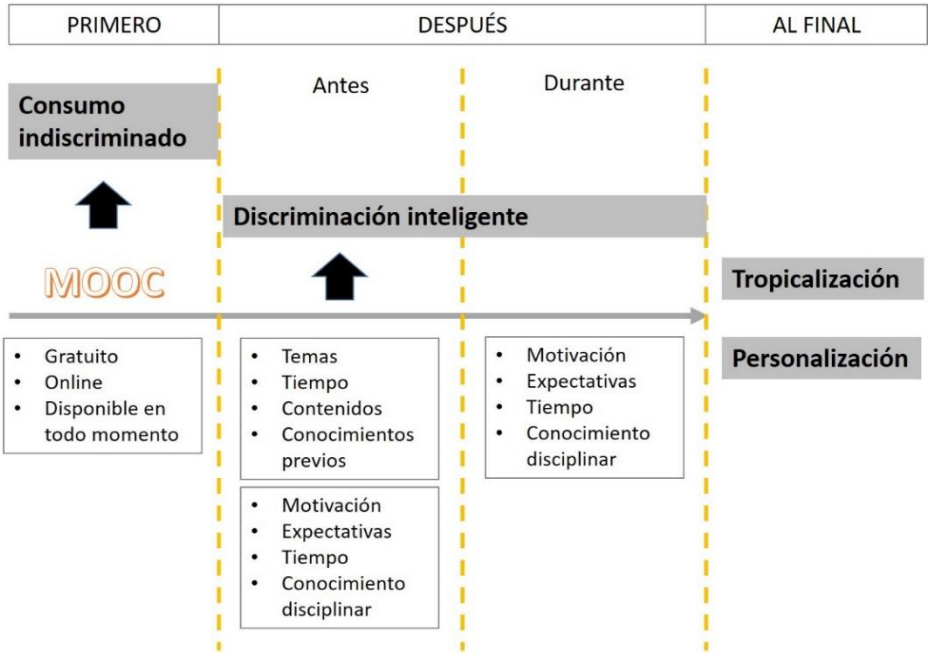

Source: elaboración propia.

Likewise, through the analysis of the data obtained, it was possible to establish four phases for the users of a MOOC to select, to study and incorporate it at some point in their educational practice: 1) indiscriminate consumption, 2) intelligent discrimination, 3) tropicalization and 4) customization.

First, there is an indiscriminate consumption (Phase 1) driven by the free course and availability. As you have more experience, the user can achieve intelligent discrimination (Phase 2), based on what can be known about the topics, time, content and previous knowledge required. At the beginning, the motivation and the expectations of the users play an important role. Users care a lot about the time and know that they require some knowledge. During the course, it is important to keep motivation, meet expectations, have enough disciplinary knowledge and have the time to continue advancing in the course. In the end, depending on the user experience, the user may decide to take the course to tropicalization (Phase 3), where he is already able to incorporate other strategies and use it. If the course has the necessary characteristics, the user can arrive at the

customization (Phase 4), whereby a MOOC could go from the massive to the customizable and be applied in specific contexts (See Figure 4).

**Figure 4.** Codificación axial de las fases de un MOOC.




Source: elaboración propia.

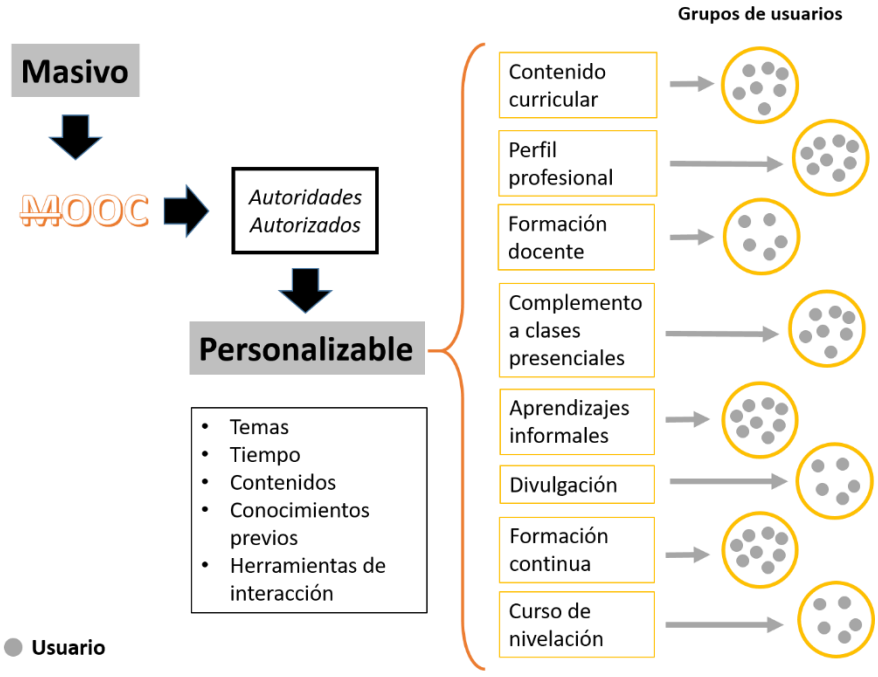
Considering that in the MOOC there is information to be transmitted to users (or consumers), what Baro (2013) mentions regarding the two-step flow theory occurs in the tropicalization phase. Teachers play the role of opinion leaders, incorporating (or not) the MOOC in their educational practice and it will depend on which their students can use them.

The MOOCs are by definition massive, however, the diversification they are experiencing shows the need for a move away from the masses (Castells, 1997). Authorized or authorized authorities need to have courses that meet their educational needs, for which they must have information about the subjects, the time (when to take it, duration, time of dedication), contents and previous knowledge required. In addition, the interaction that can be given among the participants during the course is also an important factor. With appropriate information education

authorities (administrators and teachers) could have a MOOC that addresses the needs of specific user groups (See Figure 5).

In the case of MOOCs, attention should be paid to Thompson (1998), the assumption that recipients of products are passive observers should be abandoned and that the process of receipt itself is free of problems, that it is a process lacking a critical perspective through which products are absorbed by individuals, as the sponge absorbs water, since the previous assumptions have little to do with the current character of the receptor activities and with the complex ones ways in which products are accepted by individuals, interpreted by them, and incorporated into their lives.

**Figure 5.** Codificación axial fase de personalización de un MOOC.



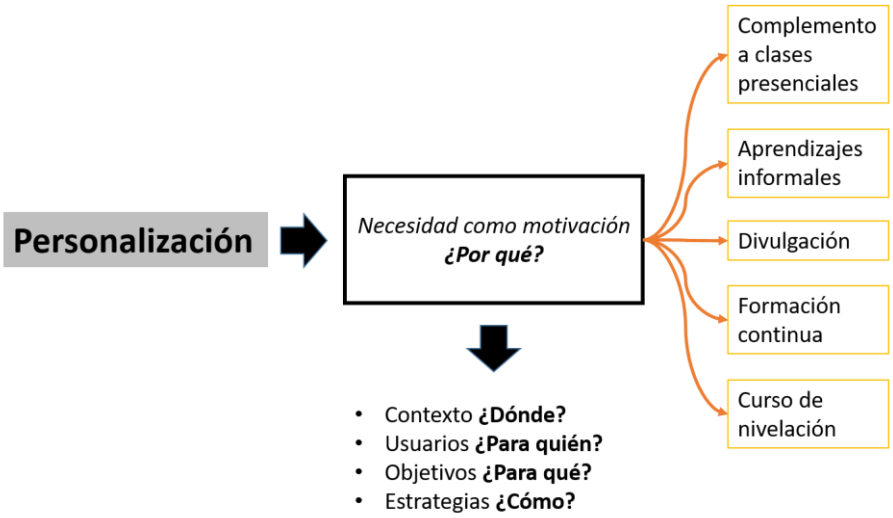

Source: elaboración propia.

Personalization starts from a need as a motivation, which, at some point in time, can be addressed using a MOOC in a specific area in higher education: complement to face-to-face classes, informal learning, dissemination, continuous training or leveling course. After identifying the need, the development of a massive and open online course implies that it is possible to describe four aspects:

1) context, 2) users, 3) objective and 4) strategies. To carry out this description it may be useful to seek to answer the questions Where? (context), for whom? (users), what for? (goals) and how? (strategies). Likewise, at the moment of developing the strategies, the following elements should be established and described in detail: topics, time, contents, previous knowledge, evaluation and interaction tools (see Figure 6).

The categories mentioned above (motivation and previous knowledge), as well as the context, are important both when developing a MOOC and evaluating it. Koller, Ng, Do, & Chen (2013) argue that retention in MOOCs should be considered taking into account the context of the students' intention, especially considering the diversity of previous knowledge and the motivation of those who choose to enroll. Also, the above helps to highlight and understand the value they get from the MOOCs who do not conclude them, as well as those that do, with the learning experience that best suits their needs.

**Figure 6.** Codificación axial personalización de MOOC en la educación superior.




Source: elaboración propia.

The diversification of MOOCs makes sense when considering the idea shared by Castells (1997) regarding the fact that the audience is not a passive object, but an interactive subject. This opened the way to its differentiation and to the transformation of the media, from mass communication to

segmentation, personalization and individualization. Due to the multiplicity of messages and sources, the same audience has become more selective. The selected audience tends to choose their messages, which deepens their segmentation and improves the individual relationship between sender and receiver.

Likewise, for teachers of higher education institutions, it is imperative that efforts to develop massive and open online courses be supported by institutional policies that allow a more adequate use of technological resources. In the same way, it is always productive for them to turn to the experiences of other institutions and work in collaboration with other academies (either inside or outside their institutions). This is consistent with Aretio (2017), since considering the experience of others will allow institutions to advance in the implementation of MOOC, as a strategy to deal with various problems that have already been identified as critical in university studies.

It should be noted that the results obtained reflect several aspects proposed by the Bill and Melinda Gates Foundation in terms of study topics. Among the priority points are: the purposes and designs of the different types of MOOC; the types of students, courses and contexts for which the MOOCs are effective; the components of the MOOC that most impact on the learning of the participants; temporary conditions; and the goals that both students and institutions can help achieve through MOOCs (Downes en Sangrà, González-Sanmamed, & Anderson, 2015).

Finally, recalling the results of the analysis of Chiappe-Laverde, Hine, & Martínez Silva (2015) regarding the need to implement teaching models based on practical experiences near MOOCs, it is worth mentioning that the results obtained in this research will be fundamental to propose a methodology for the design of customizable MOOC.

## 4. Conclusions

The literature has identified the emergence of various types of MOOC. Now we talk about different categories of MOOC depending on their structure, duration, content, etc., in an effort to serve more and more specific groups. This suggests that the notion of mass presents several problems for academic performance because: 1) groups that consume MOOC have specific interests linked to their context; 2) people want to transform digital content to be applied in specific contexts, with specific educational objectives.

The diversification of the MOOCs shows the need to go from the mass to the personalizable, attending groups of users in specific contexts and with specific educational objectives. In the intelligent discrimination phase, to the extent that MOOCs have the information that education authorities require, it will be easier to select courses that meet their needs. At this time, educational institutions are producing and using the MOOC as a strategy to achieve very specific objectives: complement to face-to-face classes, informal learning, dissemination, continuous training and leveling courses. In the personalization phase, if the producers of MOOC (in this case, educational institutions) have a clear context, users, objectives and strategies may have as a product courses that will ultimately meet the needs of groups of users specific.

Therefore, it is considered necessary to propose methodologies for the design of MOOCs that go from the mass to the personalizable, in such a way that it is possible for the users, specifically the academic authorities, to carry out the production of a MOOC meeting the needs of groups of users, arriving at the personalization phase described above.

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