

La comunicación y la colaboración vistas a través de la experiencia en un MOOC

Communication and collaboration through a MOOC experience

<http://dx.doi.org/10.32870/Ap.v9n1.942>

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RESUMEN

Palabras clave

Aprendizaje en línea, trabajo colaborativo, educación en línea, comunidades de aprendizaje, wiki, ambientes virtuales de aprendizaje, MOOC, foros de discusión

En este texto reflexionamos sobre la comunicación y la colaboración como dos aspectos centrales en el diseño de los ambientes virtuales de aprendizaje; en buena parte de los cursos que se ofrecen, el diseño instruccional no se enfoca hacia la construcción de comunidades de aprendizaje, sino a la elaboración de una serie de actividades académicas que mantienen un esquema de control por parte del docente a través de la moderación de los foros y las instrucciones, que deja poco margen de autonomía y autogestión entre los alumnos. Llevamos a cabo una revisión del curso masivo abierto en línea (MOOC) Tecnologías de Información y Comunicación en la Educación, impartido en la plataforma Coursera. La metodología de trabajo se basó en la revisión de los principales conceptos abordados y el análisis de cuatro aspectos del curso: los hilos de discusión de los foros; la gestión de los alumnos en comunidades de aprendizaje; la participación en varios canales de comunicación; y los resultados del curso. Esto permitió obtener resultados importantes sobre la idea de viabilidad de estos cursos; uno de ellos fue que la comunicación entre comunidades de aprendizaje y los grados de autonomía para realizar actividades colaborativas entre cientos de participantes, que generen productos colaborativos elaborados de manera voluntaria, se fundamenta en la motivación por compartir un lenguaje e incentivos similares.

ABSTRACT

Keywords

e-learning, teamwork, collaboration, communication, online courses, virtual learning environments, community of learning, wiki, MOOC, online discussions

The following text presents an analysis of communication and collaboration as two central aspects in the design of virtual learning environments, noticing that in many offered courses the design does not necessarily focus on creating learning communities, but to develop a series of learning activities that basically maintain a control scheme by teaching through moderation and instructions, which leaves little margin for autonomy and self-management among students. To this end, has been analyzed the MOOC Information and Communication Technologies in Education in the Coursera platform. The working methodology was based on the review of the main concepts (communication and collaboration) discussed in relation to the AVA, the main topics of discussion forums, management students in learning communities, participation in various communication channels, results of course approval. These results demonstrated that communication and collaboration is possible in MOOCs, and how autonomy and motivation is substantial for collaborative efforts among hundreds of participants. The study confirmed that collaborative products can be made voluntarily, if participants have a common language and similar incentives.

Received: May 31, 2016
Accepted: September 14, 2016
Online Published:
March 30, 2017

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INTRODUCTION

Communication and collaborative work are two of the principle elements comprising the virtual learning environment (VLE). The majority of courses mediated by technology offer a series of learning activities, such as forums or collaborative documents, the intention of which is a final product, achieved without the intervening construction of any enduring learning community, promoting neither one's own objectives nor any axiological or metacognitive ones. Thus, we can observe two, great groups of courses: those that promote, beginning with their very design, constructivism, autonomous learning and self-directedness to strengthen participants and create communities of learning; and those that continue to have a very high degree of teacher intervention, evidenced by an excess of instructions, preprogrammed materials or the moderation and intervention of professors, centered on the transmission of information that will be evaluated, all of which limits the possibility of the emergence of collaborative work.

This text takes up anew the debate between communication and collaboration, as well as the conditions that make possible self-management among students with respect to their progress through coursework, decisions about where they work, and as a result, the establishment of virtual communities for learning. These elements were analyzed in the results of the *massive open online courses* (MOOC) that were offered in Coursera: "Information and Communication Technologies in Education" during 2013 and 2014, which had approximately 22,000 people matriculated more than 13,000 of whom remained active during the period of the courses.

The aim of this text to reflect on the need for virtual environment courses to be massive rather than having controlled matriculation, on whether they should be based on the integration of the participants, inspire autonomy and self-direction, and assist in a learning community's evolution toward becoming a community of knowledge. Such an approach will allow the instructional design of VLE courses to be proportioned between the activities of teaching and learning because it seeks people's voluntary and self-motivated participation in the functioning of this process. In this sense, the premise is that communication precedes collaboration and therefore is the basis for the construction of networks and learning communities.

THE DEBATE BETWEEN COLLABORATION AND COMMUNICATION IN VIRTUAL ENVIRONMENTS

While it is true that the progressive increase and integration of new information and communication technologies (ICT)—most importantly Web 2.0, with its orientation toward communication and collaboration—can be seen as an enormous advance in educational possibilities, it also brings up the question of how to evaluate the degree of communication

(beyond the transmission of messages via such technologies) and the level of learning-focused collaboration that are being achieved. In this regard, virtual environments generally start from the premise of an instructional design that assures there will be communication among all the agents involved, and that students will be disposed to “collaborate” with others in pursuit of the common goal proposed for a particular activity, and which results in the construction of a community.

A commonplace practice we find in the majority of virtual environment courses is the programming of forums—whether compulsory or not—based on the supposition that this space, on its own, will generate community regardless of whether or not it proposes some goal for learning or communication. However, this level of interaction requires, on one hand, that participants already have certain levels of literacy and that, on the other hand, they are willing to take part beyond merely adding an isolated message or comment:

The forum as a space of asynchronous virtual interaction leaves the responsibility up to the students as far as the possibilities for planning, organizing, and structuring ideas, discourse or argument are concerned. It also requires permanent interaction between students and the teacher, which implies reading the contributions made by the other participants, analyzing them, understanding them, and discussing them. All of this requires having explicit and clear written discourse directed to the people with whom one is going to interact. (Ruiz, Martínez, Galindo, and Galindo, 2015, p. 58).

While the educational team organizing the course has a clear pedagogical intent for the use of the forum, it must be asked to what extent their goal is achieved; that is, whether the messages from students, including the contributions from the moderator(s), constitute communicative acts or whether we are dealing with a unidirectional flow of transmissions. García-Cabrero and Pineda (2010) point out that group interactions are complex and do not automatically lead to collaboration and shared understanding for the members. Although in most of the programmed forums the teacher establishes minimum criteria of “participation,” these are not determined conjointly by the participants; and in a few cases, their preparation and implementation are considered in terms of logistics.

Beyond the fact that tools like categories and checklists can be created which guide participation, the evaluation of messages in forums continues to be a thorny issue when grading because the activity itself, from the standpoint of evaluation, is highly subjective. Indispensable formal criteria exist for the comprehension of any contribution, such as clarity, spelling, and syntax. However, the greatest challenge centers on participations that are part of a series of learning activities that may or may not receive a grade from the teacher. But especially because both student and teacher need to consider what they hope to achieve in each forum, one is forced to wonder about the question of how the participations are to be evaluated: Will the length of responses be given more weight than the concision and clarity of thought? Are a minimum

number of words or comments expected? Are one or two occasional participations enough or must one maintain a constant, active presence during the entire forum?

It is worth noting in this regard that “participation in forums” is sometimes considered to be a learning activity and, at other times, a channel of communication. The common assumption is that these spaces essentially reproduce the work dynamic found in the presence-required classroom, both in the sense of discussions among the participants and that of the opportunity for interaction with the teachers. The main problem is that forums cannot be considered comparable to classrooms; they each have their own unique characteristics and dynamics, and it is evident that their regulation—which is not to say moderation—implies that communication can be academically evaluated, a problematic and complex issue. It is the environment in its totality that constitutes the space of teaching-learning.

Seen in this way, discussion forums do not necessarily create knowledge or community, especially when they are considered activities required for receiving a grade, something which does not exactly imply there would be collaboration among students that would end up forming a community of knowledge with quality products. There is ample and varied literature on the advantages and experiences related to educational forums, which we do not intend to go into in depth here. Nevertheless, the central focus of the discussion is on the activity itself—its conceptualization, design, and execution—rather than grading communication for its own sake.

Collaborative activities designed by teachers should be viewed as joint work in which there is a sharing of values, such as confidence, respect, perception, mutual recognition, and shared cognition, among others. These shared values all derive from communication that is sufficiently explored that it creates solid work associations (Frasquet, Calderón, and Cervera, 2012). At root, perhaps evaluation ought to be situated in the aspect of the construction of relationships and how a learning community—which is, finally, a community of knowledge—is formed, rather than in the activity of transmission of information.

A brief glance at the different courses offered in educational environments allows us to identify which ones have constructivism as a focus and model, on the foundation of which have been designed their proposals for teaching, learning, evaluation, and interaction. And while it is true that in the space mediated by technology a vision has been developed that places the student at the center of the process and simultaneously revalidates meaningful experience and knowledge, one would have to wonder whether it is not, in some way, just continuing to reproduce the same schematic of traditional education albeit through the accommodation of the components and actors involved in some other form.

If collaborative work seeks to create communities of learning and knowledge, then why aren't the instructional, pedagogical, and didactic designs focused on establishing bases for the procurement of autonomous learning and for strengthening the role of communication to achieve collaboration in learning communities? Such a vote of confidence in self-management by students has yet to be realized and promoted in the virtual environment, and the lack of its being made is probably responsible for communication and collaboration continuing to be seen not so much as mediated by ICT as by teachers who consider themselves to be agents that, from the opposing trenches, need to maintain a certain level of control.

On the other hand, collaborative work is another of the aspects that teachers repeatedly seek to promote in different virtual environments, to try to see if people can work with one another at a distance, without having to meet physically, and create concrete and interesting products when provided with only a minimum of examples or instructions for their realization. This situation presupposes, as in the case of the forums, that students will cooperate voluntarily and that there is, in the background, an evaluative stimulus for learning that emanates from the other. It is usually overlooked that this level of organization does not appear overnight and that, with the idea of fomenting collaboration, the goal ought not to be the realization of a learning activity but rather the development of a community of knowledge that pursues metacognitive and axiological goals and shares concerns which, in principle, stimulate and inspire people toward collaboration.

In the VLE, where the trend is toward the principle of asynchrony and the use of new technologies, communication antecedes collaboration, after all "...if it true that new technologies destroy physical distances, that doesn't mean they destroy all distances: cultural and cognitive distances are still very much alive. From this we can conclude that the simple presence of ICT is no guarantee that they will produce interesting collaborative actions" (Cabero and Llorente, 2007). In the widest sense of the term, this supposition ought to be above the academic mottos so that it might gradually become a community of learning and knowledge based on mutual knowledge and trust. For that reason, we can agree with Cabero and Llorente (2010) when, with regard to a virtual community (VC), they point out the following:

The fundamental aspect of a VC is not the online network but rather that it is composed of persons, therefore it will be successful to the degree the people who participate in it are united in the realization of common work; that is, if they pursue common interests. We should not forget that, in talking about VC, we are referring directly to aspects of sociability and social interaction between its participants, not of isolation but rather collaboration (p. 4).

Thus, so that communication and collaborative work have a place in the virtual environments and thereby produce communities of learning and knowledge, the bases of these must be established from the outset by the

design of courses, over and above the instructions that must be given to students (which are absolutely vital) for each one of the proposed activities. The VLE allow for the generation of communities when and if they provide elements that serve to strengthen them: “It will be through this interaction that solutions to problems and the realization of meaningful activities will manifest themselves” (Martínez, 2003).

Valuing the degree and type of autonomy in learning, as well as self-direction, inevitably will lead us to modify our perception about communication and to observe which aspects ought to be strengthened, at the same time as “...the quality of the work and/or the product to be realized is increased when the people develop cooperative skills to learn/work and solve the problems and the actions in which they are immersed” (Cabero and Llorente, 2007, p. 6).

MOOC AS SPACES OF COMMUNICATION AND COLLABORATION

In the courses in virtual environments there is a principle of creating groups of students that don't exceed a certain number, so that they are kept within the bounds with which the professor, counselor, facilitator or team of educators will be able to help. This example considers, as is well known, not only the review and grading of activities, but also, in relation with our theme, the revision, feedback, moderation, and motivation of the participation in the academic forums. However, this derives from another principle in which teachers continue to be understood as those agents who hold the baton in these spaces, with few possibilities for strengthening the autonomy, communication, and collaboration of the students to carry out their own spaces of interaction, create their learning communities, and generate their own products.

In this sense, the MOOC have generated different reactions and opinions regarding exactly the comparison between courses with relatively controlled inscription limits and the “massive” nature proposed by this modality, especially because it would seem that in these there is no possibility of closeness between students, given the quantity of people participating and the fact that, for that reason, there would be no possibility of collaboration.

The origin of the MOOC is found in the course Connectivism and Connective Knowledge, which got underway in 2008 with George Siemens and Stephen Downes at the helm, and with the central goal of giving impetus to learning through networks and communities generated on the Web. This specific type of MOOC is known today as cMOOC, because it takes off from the theory of constructivism and intends to foster distributed learning and active participation of students in order to generate important situations of co-responsibility for the group and for the participants themselves. In these, we see the formation of learning environments with horizontal structures that contribute to making the

courses focus on the pertinence of the materials and topics of study, in accordance with the interests of the group.

Facing the cMOOC are the xMOOC, whose structure recalls the traditional school with the professor who teaches the student who listens. Between these two classifications there are springing forth some others that cover gamut of shades of gray that are constantly emerging and diversifying the supply of MOOC (Clark, 2013; Conole, 2013). MOOC is massive because thousands of people can sign up to take it, and all of the materials and participation is realized online. It is open not only because anyone can sign up for it and the contents can be used, distributed, and reused freely, but also because the participants can take different decisions during the course, according to their individual interests:

In this way, there is no closed program nor any unitary formative itinerary, but rather teachers or moderators of the course offer resources as a base from which students can interpret the material and, in time, create or select their own contents, sharing them by means of different spaces for interaction (both through internal forums, set into the system of administration of learning itself, such as blogs, wikis or spaces in social networks like Facebook or Twitter, as the case may be). Each participant contributes, in this way, toward defining the content and the materials of the course and their contributions make up the node of the network of learning that emerges around MOOC (Sánchez, 2013, p. 115).

The cMOOC, meanwhile, promote abilities such as creativity, technological know-how and autonomous learning, and they do so transversally to the specific object of study by means of different open technologies, which, at the same time, are chosen according to both the individual and group interests and needs of the participants in terms of resolving problems or raising questions. Stephen Downes, quoted by Jordi Ardell, compares both systems in the following: “The cMOOC have done interesting work in self-organization and the creation of learning communities. The xMOOC have climbed all the way up to the university lecture hall. They are very different in their focus. Their value depends on the value you see in these two goals” (Ardell, 2014).

In a cMOOC participants are encouraged to demonstrate advances in their final projects, exchange and receive opinions from others, improve their work and decide which tools would be ideal for its realization. There is a final goal that is the same for everyone, but the way of getting to it varies considerably from one participant to the next because it depends on the selection of tools, media or spaces; it thus becomes a highly personalized learning experience.

In 2012 the UNAM [National Autonomous University of Mexico] joined the call made by Coursera to offer MOOC courses and offer to the general public, in a free and open format, options for training and personal enrichment. Coursera’s course “Information and Communication Technologies in Education” was planned with a focus based on a cMOOC model, which is to say a connectivist model of learning that seeks to favor

the connection between participants and encourage them to achieve the development of goals beyond those proposed by the instructor or the course, unlike the courses denominated xMOOC, which are based on the transmission of knowledge and recurring exams to demonstrate the dominion of the concepts covered (Yuan and Powell, 2013). In a cMOOC there is a final goal that is the same for everyone, but the means for achieving it vary from one individual to the other because they depend on the election of tools, media or spaces. It becomes, therefore, a highly personalized and open learning experience that responds to the needs of each of the participants. In the words of Enríquez (2014), the professor responsible for the program, this MOOC:

...is conceived of as an open educational practice, according to the following proposals: How can we explore, even within this massiveness, the possibility of having a little bit of contact with the people? How can we get across the idea that it is not an automated course, that there really are counsellors behind the scenes who are trying to listen to them, trying to orient them and to identify what their doubts are, what the problems are that they are facing? How can we promote discussion, so that, in this immense sea of thousands of people, we can really get to know some of them and begin to put together projects jointly? The problem is framed according to the pedagogical proposition of the learning networks: "I am generating links and I am making connections with people and, through them, I am learning" (video).

The general goal of the course was to design a proposal to modify a nearby or well-known learning environment for each participant, based on the analysis of different cases of integration of ICT into learning environments. Each week, the participants could find reading material and resources for their review, as well as a learning activity that accumulated into becoming the final project, which consisted of a proposal for the design or modification of a learning environment starting out from the integration of ICT.

Considering that this course was proposed as a cMOOC, it was important to establish that the dynamic for communication was an activity that would remain in the hands of the participants; this was conceived of as way to promote autonomy and self-directedness, so that the students could organize themselves according to their interests, countries, weekly discussion topics, etc., which generated a preamble prior to realizing two fundamental activities for the course: the construction of a great wiki on digital resources that can be employed in education, and the final work that would be reviewed between partners.

The course sought to demonstrate that communication and collaboration (in that order) are possible and that students are capable of managing themselves in learning communities and of generating their own networks and products. The research of the two emissions of the MOOC "Information and Communication Technologies in Education" were concentrated in analyzing not only data but also the processes by means of which it was possible to form effective learning communities. In the following section the methodology employed will be explained.

CONTEXT AND METHODOLOGY OF RESEARCH ON COMMUNICATION AND COLLABORATION IN MOOC

The goal of the analysis is not centered on the statistical study of the number of participants in the two emissions of the course; it focused on the dynamic of the students throughout a period of five weeks, covering four aspects: a) discussion forum threads that provided the reason for the type of relations established and the manner in which the participants in the course directed themselves; b) deriving from the previous point, as a form of participation within the Coursera platform, comparison with other external media, such as the official channels of MOOC in YouTube and Twitter; c) evaluation of the students before, during, and after the joint construction of the wiki about technological tools for education; and, d) analysis of the number of people who presented final projects; who, among the total, were approved.

In the case of the communications media, we analyzed the first two of four channels by means of which contact was maintained among participants and, evidently, with the course teaching team. Table 1 shows the characteristics of each mechanism.

Table 1. Spaces of interaction employed during the MOOC course

Interaction Space	Description
Discussion Forum	Asynchronous interaction space where the participants created multiple topics of discussion; additionally, the instructor initiated specific discussion threads as a space for the exchange of ideas about the topic of the week.
YouTube channel (<i>Hangout live</i>)	Synchronic interaction space; five sessions programmed during the length of the course; possibility of direct communication by means of YouTube, Twitter o Today's Meet.
Twitter (#ticunam)	Asynchronous interaction space for any doubts or clarifications regarding the course, and as a synchronic media form on the day of the live sessions.
Today's Meet (<i>backchannel</i>)	Interaction space utilized in some sessions so that the people without Gmail or Twitter accounts could emit comments during the live sessions, since it is possible to use it via the Web without the need to sign up.

It is important to point out that in a more or less general way the MOOCs have a tendency to show higher levels of matriculation when compared to the actual number of people who end up taking the courses. Despite such

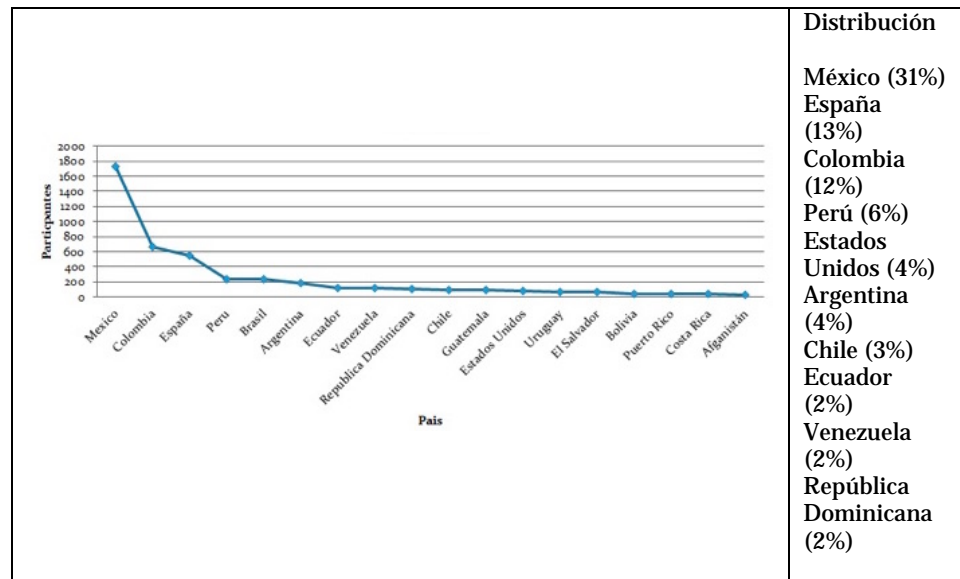
over-enrollment, what is really interesting is the dynamic that occurs while the courses are taking place. For example, there could be people who are taking the course even though they do not perform any of the activities; others who only review the materials, who do not turn in final projects, or who sign up but never enter into the course during the active period (that is, who enter after reviewing the activities or contents). For these reasons, the matriculation numbers can increase even after the course has taken place. Table 2 shows the enrollment (initial and final) of the two emissions of the course, as well as the approved students.

Table 2. Matriculation of participants in the two emissions of the MOOC

	Primera emisión	Segunda emisión
Matrícula inicial	18 000	11 000
Matrícula final	25 000	17 000
Aprobados	1 540 personas (aprox. 7%)	590 personas (aprox. 5%)
Países de procedencia de los participantes	75	116

Note: the enrollment numbers are closed.

The graph shows the countries of origin of the matriculated students, the majority of whom are Latin American, although it should be pointed out that there was participation by people from other continents who speak Spanish.



Graph. Approximation of countries of origin of the MOOC.

In addition, it should be mentioned that the MOOC analyzed consisted, for the most part, of people inexperienced and unfamiliar with this type of course, who did not know the difference between the xMOOC and the cMOOC courses, and who were unfamiliar with the Coursera platform.

For this study, we first realized an ample theoretical review, which we presented in the form of a synopsis previously, and in the construction of a statistical analysis, review of diverse media, and the creation of tools which served as references on communication and collaboration to analyze the interaction in the course in question. In the following section, and respecting the proposed order previously mentioned in the earlier sections of this text, we show the results of the communication spaces, and afterwards, those of collaboration.

COMMUNICATION SPACES

Given that the course was conceived on the basis of the pedagogical proposal of the networks of learning, one of the goals was to promote meaningful interactions among participants; that is to say, contributions that show the group members are being attended to by their colleagues. In Coursera, the principal mechanisms of communication are the forums; these can be programmed by teachers and their staff, although the participants can also open their own discussion forums. In the first case, the forums can be visualized in the “Lessons” and the “Discussion Forums.” Each one of these is denominated as a “discussion thread.” Table 3 demonstrates the total number of communications of this type.

Table 3. Discussion threads in the Forums section of the MOOC

	Primera emisión	Segunda emisión
Total de hilos de discusión	1 345	1 200
Número de participantes activos en el curso	13 000	9 400
Número de participantes en los foros	4 966	1 696

In the case of the “discussion threads,” the analysis was centered, on one hand, on the number of people who realized contributions to at least one open forum. Really, it was meaningful that in both emissions of the course the participants themselves opened the majority of the discussion forums without there even having been an instruction from the teaching team in this regard. It is important to note this aspect because it corroborates that the students are not only capable of self-direction but also of generating communications networks as part of a wider process of autonomous learning, given that only one topic was programmed for discussion each

week, so that the rest of the threads were the product of the people matriculated in the courses.

The nature of the topics ranged from the construction of communities according to country of origin, type or level of school in which the participating students gave classes, and sub-discussions derived from the weekly debate topics, without overlooking the fundamental aspect: the expression of doubts about the course itself, the activities of the program, the handling of the platform, the final project, etc. It merits attention that, even when the teaching team participated by answering some questions, the majority of the responses, moderator-style interventions, and discussions were guided by the students themselves.

One characteristic teaching strategy of the MOOCs in general is that they design and produce videos with the goal of introducing a topic, explaining it, or formulating some commentary. En the course in question, the teaching team decided to realize weekly live transmissions of a session on a channel of YouTube, to present and discuss topics, draw conclusions, comment on some of the messages from students, and assuage doubts about activities, among other things (see Table 4).

The live video was carried out during a transmission time that was appropriate for the majority of Latin American countries; one advantage was that the video was recorded and made available to students through access across a variety of different media. Those who could connect to the live transmission also participated by sending messages over the YouTube channel or on Twitter, in a space accessed by using the hashtag #TICUNAM for asynchronous communication outside the Coursera platform. Another space used to a lesser degree was the tool Today's Meet. Table 4 shows us the number of times that the videos were seen and the total of registered comments.

Table 4. Number of visits to the course videos on the MOOC channel in YouTube

	Sesión 1	Sesión 2	Sesión 3	Sesión 4	Sesión 5
Visitas	7 334	2 500	2 147	1 420	1 515
Comentarios	1 693	599	10	8	284

While during the development of the course in 2013 there were more than 23,000 people registered, there are differences between those who the platform registered as having realized some activity and the number who maintained a virtual presence as part of the group. Ain the first case there were about 13,000 people who entered at some point during the course, while only 4,966 participated in the communications spaces. Analyzing the channels of interaction offered to the MOOC community (see Table 1),

we find that the discussion forums were the medium by which participants created networks of communication, knowledge, integration, and a sense of belonging. More than 90% of the discussion threads were established by the students themselves, which speaks to the importance that interaction in the courses of the VLE had for them, in terms of staying active and integrated during the phase in which the collaboration and generation of knowledge by means of the construction of a joint product was put in practice. Before moving on to the following section, in Table 5 we present the classification generated in light of the revision of messages and the types of interactions.

Table 5. Category of social presence

Category	Indicators	Description
Affective expressions	Expression of emotions	Use of <i>emoticons</i> or expressions about the technical problems, the activities or the topics dealt with in each of the sessions
	Use of humor	About the comments of the teaching assistant or some participant, and about technical problems
	Self-revelation	References to the messages about relationship with ICTs and education, problems with topics or activities and, in many cases, about one's experience of the course
Interactive expressions	Continuity of the discussion thread	The majority of the messages from participants discuss the topic
	Quote of messages from others	Quotes from the comments of their companions on the YouTube channel. For their part, the teaching assistants respond to and try to resolve the most frequently expressed doubts in the <i>hangout</i> transmission
	Explicit reference to messages of others	The students make explicit reference to the messages of other participants by means of vocatives. In particular, many messages inform the teaching assistants about technical problems

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	Quoting messages from others	Quotes from the comments of their companions on the YouTube channel. For their part, the teaching assistants respond to and try to resolve the most frequently expressed doubts in the <i>hangout</i> transmission
	Explicit reference to messages of others	The students make explicit reference to the messages of other participants by means of vocatives. In particular, many messages inform the teaching assistants about technical problems
	Asking questions	The participants generate questions related to the topic being explained by the teaching assistant, to clarify their doubts, or about the opinions of other participants or problems related to the activities
	Compliments or expressions of appreciation	The students compliment or express their appreciation for the comments of their companions for having resolved doubts or given their opinion regarding some message
	Expressions of agreement	The expressions of agreement most frequent are those which have to do with technical problems of the session and with the comments of their companions or with affirmation from the teaching assistants
Cohesive expressions	Vocatives	In the interactions over the YouTube channel, to be able to offer compliments, give thanks or to formulate questions, the students use vocatives to direct themselves to a specific person; the most commonly used are the names of the teaching assistants
	Reference to the group, use of inclusive pronouns	Many participants refer to the group using the pronoun "we," and with the verbs conjugated in the first person plural
	Salutations.	The salutations commonly mention the geographical place from which the participants are connected, such as "Regards from..."

Source: Rodríguez Velázquez, 2015.

We encountered three types of expressions (affective, interactive, and cohesive) through which the participants appropriated and made their own the majority of the discussion threads in the forums. Also, in the description of the indicators in Table 5, we can see that, although there were recurrent messages directed to the teaching staff, they were basically geared toward the resolution of doubts. It should be noted that a large part of the communications were established between students and, for such, they made use of a range of different resources that revealed awareness concerning the construction of a learning community.

ON COMMUNICATION AND COLLABORATION

One of the main goals in the VLE is the search for spaces in which communities of knowledge can be engendered through the activities of learning and self-evaluation which permit the joint creation of products. As we have pointed out at the beginning of this text, the collaboration—or, better said, “achieving” that students work together on tasks that are not necessarily obligatory—has as its root challenge, as in any human activity, the establishment of a relationship for the purpose of generating a product with someone who may or may not be previously known to us.

For this reason, in the instructional design of the MOOC, considering this aspect and the quantity of people who might enroll, the option of establishing collaborative activity for the entire community involved in the course was taken after the third week and as a result of evaluating the degree of integration of the participants. To maintain the underlying idea of a cMOOC, both the channels of communication and the work materials constitute the bases for establishing the possibilities of defining adequate examples for the first collaborative activity and which would allow for the creation of a community of knowledge in the context of a VLE. It is not the goal here to discuss the pros and contras of the wikis, given the amount of the existing literature on the subject, but rather to discuss the aspects that contributed to this text. In this sense, it seems to us important to revindicate the words of Nordin and Klobas:

With the use of the wikis, students not only are learning to write and publish collaboratively, they are also learning how to develop and utilize all kinds of collaborative abilities, how to negotiate with others to achieve consensus about appropriateness, which is to say belonging, and more. Essentially, the students begin to teach others. Research has shown that professors and students can be very creative and develop innovative and useful activities for learning. [As a result,] attention is centered in the community of knowledge rather than in the person who is learning (Nordin and Klobas, 2009, p. 3).

Given that the course was centered on proposing the integration of different ICT in educational environments, the goal of this exercise was to construct, in a collective manner, a list of educational resources, organized according to the classification made by Margulis (2005, in OECD, 2007)

in the GoogleDocs text processor. Each participant was able to add resources on the list (along with a brief description and suggestion for use, as well as reference links), within the corresponding category (see Figure).



Figure. Open educational resources.
Source: classification proposed by Margulis (2005, quoted in OECD, 2007).

The Coursera platform, in its first courses, offered the possibility of using a wiki space for each one; this possibility has been discontinued in the currently available courses. The decision to use this Google space obeyed the desire to offer participants the opportunity of interacting with this type of tool.

This activity turns out to be complicated for a MOOC course because of the number of participants and the characteristics of the wiki, given that everyone can edit and, at the same time, completely erase contents, realizing acts of vandalism or participating erroneously. A few months prior, the teaching team of the course “Fundamentals of Online Education: Planning and Application,” on the same platform, were obliged to cease their operations owing to technical problems occasioned by the use of calculating pages from the Google Drive suite as a means of organizing teams. The number of participants who were editing on a single calculation sheet did not permit the desired results, which provoked anger, complaints, and complications that the organizers of the course could not resolve quickly, so they decided to close the course down. In light of this experience, the following measures were adopted:

This activity did not have any points assigned to it; it was an optional activity that allowed whoever wanted it the chance to explore the wiki resource and to participate in the construction of a list of open educational materials.

- Realize a daily backup of the progress.
- Carry out constant monitoring of new participations and maintain a uniform text format.
- Offer a tutorial on wiki editing (first in video, later in text), offer feedback on advances through the hangout weekly transmission, and share the link to the list's publication

Participation turned out to be orderly, abundant, and productive; the construction of the list of educational resources was achieved, with each element having its respective suggestions for use, and maintaining a uniform format throughout the period in which it was kept open for editing.[1] The challenge represented by the format of the wiki and the lack of credit points offered for the activity did not discourage participation in the work on this collective product. In terms of autonomy, the community not only worked on the main categories shown in the Figure, but also in relation to the different activities and professions that the members of the group developed, generating new categories, such that a diversity of resources were integrated for the edition, interoperation of platforms, administration of LMS or contents, among others; in each case, the majority of participants realized a brief description of the resource.

Table 6. Work of the wiki collectives.

	Primera emisión	Segunda emisión
Número de ediciones	15 355 palabras	17 224 palabras
Número de recursos	437	350

Following up on the suppositions that have been under development with regard to communication-collaboration relationships for the construction of learning communities in LVE, it should be pointed out that this activity was fundamental for generating a sense of belonging and mutual aid, something that was reflected in the final course activity, which, unlike the first one, did have credit value toward the final grade of participants who sought certification of their participation. This fact is important, because there were people who did not participate but who did express interest in doing so throughout the course period. Given the characteristics of the Coursera platform, a method for evaluation based on pairs of participants was employed. Having intervened during the final work in a collaborative and non-obligatory way in the wiki allowed, for spontaneously given assistance and advice about improvements to occur between people whose channels of communication went beyond the platform.

The wiki collaborative is solid proof that learning communities can be established if they combine, right off the bat, familiarity and knowledge

among participants by strengthening the integration of the members with examples of respect and creative autonomy. As we have mentioned, the MOOCs are a challenge in many ways, but what underlies their design, as well as the goals they seek to promote, do not differ in the many courses of this type that may be found offered in LVE: the creation of networks of learning and of the sense of community.

The work realized by over a thousand people during the two emissions is not only an activity that has survived in the virtual space; in itself, it is an arduous work that permits participants to appropriate it for themselves, to use the resources, and to utilize it for research. In this sense, the experience of learning is seen as being matched by the motivation to construct a virtual learning community that, to paraphrase Chao-Min, Meng-Hsiang, and Wong (2006), is based on the stimulus for sharing a common language—in this case, one involving ICT and education—for building trust, and for identifying oneself with other people whose labor revolves around similar propositions. And while we may not have been able to foresee all the results of participation and integration, in metacognitive terms, the autonomy demonstrated in the discussion forums and the voluntary edition of the wiki constitute meta-objectives proposed in the cMOOC analyzed and which can be considered for other cases.

CONCLUSIONS

Collective work is already difficult to produce in almost any learning environment imaginable. Thus, when talking about LVE, the elements that ought to be considered in proposals for the construction of collaborative activities are even more important, given that, in addition to the design of the activities themselves, it is essential to select technologies that are adequate to the task of generating communication and giving impetus to the appropriation of common space. Wenger mentions three elements that are basic for the construction of community: shared understanding (which is constantly renegotiated by its members), mutual commitment that unites its members in a cohesive group, and a shared repertoire of common resources that result from shared practice (Wenger, quoted in Gros, 2011). Analyzing with greater detail what these three elements represent, we identified that in all of them it is necessary for communication to be constant and efficient, in the sense of a real construction of dialogues, where there are exchanges of opinion and doubt, as well as proposals for action, so that the agreements reached by the community or group in question might truly be consensual.

In the MOOC “Information and Communication Technologies in Education” we have seen how a diverse range of channels of communication have been used for different tasks. Moreover, we have seen how, on some occasions, the same tool has served to fulfill distinct functions, in addition to serving for the expression and exchange of ideas; for example: putting together work groups; receiving and offering help

among colleagues; implementation of strategies for problem solving; and proposals for follow-up or agroupment of the end products that were created.

Expressed in another way, in this MOOC different levels of communication and integration were reached and these were able to become concretized into effective strategies of collaborative work; a significant achievement, given the characteristics of the massive group, in which there was a confluence of heterogeneous levels of technological abilities, the limitations in terms of wide-band connectivity of many of the participants, and the social functioning (the acceptance and appropriation) that the individuals perform with the dynamics, tools, activities, and materials that were proposed for their utilization. The diversity of the tools selected so that the different users would feel comfortable and the constant invitation to appropriate those tools for themselves, affording a sense of recognition for such practices, were factors that made possible the creation of a learning community in which both communication and group collaboration were exercised.

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