Perceptions of University Students regarding the Use of an xMOOC as a Support to the Learning Process of the Informational Dimension

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ABSTRACT
The article presents an investigation that sought to determine the perception of undergraduate university students, about an xMOOC entitled "The great discovery – El gran hallazgo", which was designed with the objective of contributing to the formation of the informational dimension (search, localization and access, identification and use of information) within the framework of a mandatory subject of La Sabana University, 308 students from the 9 faculties participated in this study. Methodologically it was chosen a descriptive scope framed in a non-experimental design, under a quantitative approach. There were also established as categories of analysis: The information management, utility, learning experience and motivation. This study concluded that the xMOOC supported learning, increased understanding in aspects of the information dimension, highlighting the utility of the xMOOC; although it is to mention that there was a low perception towards the motivation of using it.

Keywords: digital competence, massive open online courses, information literacy, higher education

INTRODUCTION

At present, Information and Communication Technologies (ICT) are part of everyday life, becoming a necessity; generating in this way that different international entities, International Society for Technology in Education - ISTE (2007), Association of College and Research Libraries - ACRL (2000), European Union (2006), provide guidance in the educational processes in the ethical, responsible, cultural and social aspects related with technology. Taking into account these efforts at the institutional level, Colombia as a developing country is not the exception in the integration of ICT; it is there for, that the Ministry of National Education (MEN) has formulated initiatives that aim to contribute to these trends; such as the ICT Competencies for Professional Teacher Development, presented in a first moment in 2008, with an important update in 2013, in the same way private entities have also supported and encouraged these initiatives, showing the relevance of the topic.

Based on this panorama, La Sabana University has proposed the project of Digital Competence for undergraduate students which focuses on developing "the capacity to deal critically and reflexively with academic and social situations in a Digital environment" (University of La Sabana, 2015, p. 1). This project
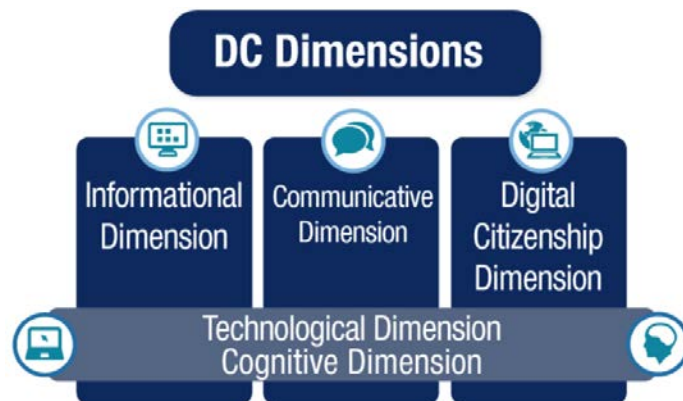
Figure 1. Taken from the proposal of Digital Competence of the Center of Technologies for the Academy of the University of La Sabana

contemplates that the Digital Competence focuses on strengthening five dimensions: Cognitive, informational, communicative, digital and technological citizenship.

It is intended that throughout the professional career students become Digital Competent. Within this scenario, the investigation was proposed with the objective to describe and document the perceptions about the implementation of an xMOOC in the learning of the informational dimension oriented within the mandatory subject, Digital Basic Competences (CBD) for the undergraduate students of different careers.

THEORETICAL BACKGROUND

ICT has permeated different scenarios of human being daily life; although, it is not an obligation that they are part of the educational field as an instrument without a specific purpose. For this reason, the Digital Competence project of the University starts with a systematically research, tracking different institutional proposals, national and international standards and the results of different experiences that have consolidated a proposal based on literature. In order to achieve a pedagogical integration of ICTs as a means that strengthens, documents, systematizes and evaluates the learning and teaching processes that are seek to achieve (Restrepo, Cantor, Corchuelo, Montenegro, & Pinzón, 2016; Wang, Hsu, Reeves, & Coster, 2014).

The conception of Digital Competence to which this research refers begins to distinguish from digital literacy, although in the literature they are approached in a similar way (Cabero & Cejudo, 2008; Centeno & Cubo, 2013; Gisbert, Espuny, & González, 2011; Gisbert & Esteve, 2011). Digital literacy is limited to the knowledge and efficient use of the Internet and the services offered by the network (Bawden, 2002; Siddiq, Gochyyev, & Wilson, 2017), while the Competence focuses on the comprehensive training and it is broader (Larraz, Espuny, & Gisbert, 2011).

In view of the above, this research considers the definition proposed by the University, being the Digital Competence "the ability to face critically and reflexively academic and social situations in a digital environment" (University of La Sabana, 2015, p. 1). In this sense, a conceptual and practical proposal was designed in which it has been defined that the digital competence is composed of five dimensions; each of them with indicators that allow to evidence the development of the same (see **Figure 1**).

For this research, it is interesting to deepen in the strengthening of the informational dimension through the xMOOC. New generations of students need to develop skills and abilities that allow them to access digital tools to make effective and efficient use, since the processes of access and use of information have been transformed (Cabero & Cejudo, 2008).

Therefore, the concept of Media and Information Literacy (MIL) arises, defined by UNESCO as the capacity that a person can develop to handle and manage information, which can be evidenced when the individual is able to search, evaluate, use and create new information that contributes to the fulfillment of personal, professional, social, labor and educational objectives (2011), which for the case of this research it will be referred to the informational dimension, while technological or digital literacy, will be understood as the technological dimension. For this reason, when it comes to information and digital literacy, both are related, since in their definitions there are characteristics of the use of computers and programs, as well as the use of sociocognitive skills, these being understood as selecting, searching, analyzing and transforming information into new knowledge (Gros & Contreras, 2006; Siddiq, Gochyyev, & Wilson, 2017).

In view of the above, the technology and information are a pair of bilateral support: The technological or digital refers to the environment and the information refers to the content being immersed everywhere; where one needs the other to evolve. For this reason the interaction between the informational and the technology dimension constitute the pillars of the Digital Competence in the XXI century (Rozo, 2016; Siddiq, Gochyyev, & Wilson, 2017).

Furthermore, the Declaration of Alexandria (IFLA, 2005) conceives the information dimension as the seed and the necessary skill to enter the knowledge society, provided that not only information is consumed but new knowledge is generated from the information consulted. According to the above, Larraz et al. (2011) mentions that informational competence is based on the following elements: Recognize information needs, find information, value results, organize information, generate new knowledge and communicate. This process of relationship with previous learning allows the appropriation and empowerment of information to generate new knowledge (Marciales, 2012).

Taking into account the importance of technologies in the educational field, MOOCs emerge. The name of these courses come from the acronym in English, Massive Open Online Courses. These courses from the educational field and from the perspective of Tiejun (2016) and Vivian, Falkner, and Falkner (2014), have generated benefits around virtual learning environments, contributing to the reflection on the importance of redefining the existing roles of teachers and educational practices. They have placed the learner in a leading role by allowing them to have flexible, open, cross-sectional and participatory training processes (Mohapatra & Mohanty, 2016; Valverde, 2014).

MOOC is a general name and encompasses several types of these courses, the most relevant in this area are CMOOC and xMOOC, courses that have differentiating aspects and in common. The xMOOC are courses based on a behavioral strategy with a specific objective, whereas the CMOOCs are based on connectivist strategies. Each type of course has some benefits and weaknesses, due to the formative strategy on which it is based and its evaluation (Brahimi & Sarirete, 2015; Kesim, & Altınpulluk, 2015; McAuley, Stewart, Siemens, & Cormier, 2010; Zhou, 2016).

According to Muñoz and Ramió (2013), this process of virtual education facilitates distance learning, thanks to the elements that characterize it and the resources that are used to generate learning processes which are constant and immediate. Those characteristics allow the students to adapt the course according to their needs and real possibilities of time and space. Giving in this way advantages of utility and availability compared to other traditional methods (Méndez, 2013). However, as mentioned by Cabero (2015), it is important to bear in mind that access to information or content, does not generate intrinsic knowledge, it is necessary for a learning experience in the person and a thread that allows it.

Within an xMOOC, users' motivation is essential; according to Ajello (2003), motivation can be understood as the weave that manages to sustain the attention and allows the development of those activities that are interesting or significant for the individual. From the educational perspective, the motivation to learn is estimated from the willingness and ability of the learner to learn, which starts from the interest to acquire knowledge and can be reflected by the autonomy to develop the activities that make up the strategy or didactic sequence. It is relevant that the pedagogical strategies take into account the motivation of the student as a key element, since it will allow to develop positive attitudes that strengthen the process of information assimilation and processes will be given in a productive and satisfactory way (Naranjo, 2009). In this sense Naranjo (2009), emphasizes three existing and essential perspectives of motivation: Cognitive, humanist and behavioral. The first highlights the meaningful ideas and reflects on what the person thinks. The second perspective, indicates the capacity that people have to grow, the particular conditions and freedom in the moment of choosing. The last, accentuates in stimuli that motivates behavior and guide individuals towards right situations and apart them from the wrong ones.

From any of the three perspectives pointed out, the relevance of motivation in the learning environment is evidenced, so the expectations of learning increase and failures are no longer seen as insurmountable (Naranjo, 2009). In the same way, cognitive abilities are strengthened, allowing the knowledge capabilities and skills needed to solve problems to flourish generating motivational components, which allows a truly meaningful and effective learning (Montico, 2004). Based on this idea, the MOOC should focus and conceive the resources in such a way as to allow the students to obtain the highest degree of motivation to generate an experiential learning experience (Abeer & Miri, 2014; Brahimi & Sarirete, 2015; Castaño, Maíz, & Garay, 2015).

Figure 2. xMOOC with all the challenges activated Elaborated by the Center for Technologies for the Academy, University of La Sabana

For this research, the pedagogical process associated with the MOOC was in line with aspects that will facilitate a close experience of establishing, discovering, knowing, and developing informational and digital skills. Conole (2015) points out the importance of having clarity about the pedagogical approach of a MOOC, in order to be able to determine all the elements that intervene in it and what is expected of the training process.

For this particular case, we are talking about an xMOOC that obeys a behavioral approach, in which the student is guided through challenges that must be solved individually as a learning experience. So, the Challenge Based Learning (CBL) was taken into account for its consolidation. The CBL has its roots in experiential learning, based and based on the active participation of the student through learning experiences, which allow him/her to be motivated by real situations (Cheng, 2016; Johnson, Smith, Smythe, & Varon, 2009; Tecnológico de Monterrey, 2015).

METHODOLOGY

Purpose of this Research

This research is intended to document the perceptions of students from different undergraduate degrees through an xMOOC entitled "The great discovery" "El Gran Hallazgo". Focused on the development of the informational dimension within the framework of the Basic Digital Competences (CBD). This xMOOC was used to work the virtual hour of complementary training to the two hours of face-to-face classes of the subject. The xMOOC contains challenges of finding information on pre-Columbian archaeological pieces. The great discovery tells the story of a Colombian peasant who found in the jungle a pre-Columbian artifact and this one was sent to the capital (Bogotá) to be studied by different experts. Starting with this story the information searching challenges are taken and assumed by students.

This study is not intended to establish direct causal relationships between the use of the xMOOC and the development of the informational dimension in students; It aims to identify those aspects that can be improved and the contributions provided by the xMOOC to the learning process.

The Great Discovery has four sequential challenges: In challenge 1 the student should respond to a series of closed questions about the types of searching engines they use and the steps they follow to find information on the Internet, this as a diagnosis. In challenge 2 information is presented to students and they must determine whether it is an academic, relevant and reliable source. In challenge 3 the student must identify what the steps are to be followed for seeking information. Finally, in challenge 4, students review the use and relevance of APA standards for different digital resources (**Figure 2**).

Table 1. Demographic variables of the participants: Sex and age

Gender	Frequency	Percentage
Female	190	62%
Male	118	38%
Age	**Frequency**	**Percentage**
Between 19 and 20 years	136	44%
More than or equal to 21 years	35	11%
Less than or equal to 18 years	137	45%
Total	308	100%

Table 2. Demographic variables of the participants: Academic programs

Programs	Frequency	Percentage
Faculty of Communication (Audiovisual Communication and Multimedia and Social Communication and Journalism)	86	28%
Faculty of Engineering (Agroindustrial Production Engineering, Industrial Engineering, Computer Engineering, Chemical Engineering, Civil Engineering and Mechanical Engineering)	76	25%
Faculty of Psychology (Psychology)	47	15%
International School of Economics and Administration (Business Administration, Administration & Service, International Marketing and Logistics Management, International Business Administration, International Economy and Finance and Gastronomy).	37	12%
Faculty of Medicine (Medicine)	26	8%
Faculty of Law and Political Science (Law and Political Sciences)	18	6%
Faculty of Nursing and Rehabilitation (Nursing and Physiotherapy)	14	5%
Faculty of Education (Bachelor in Early Childhood Education and Bachelor in Natural Sciences)	2	1%
Faculty of Philosophy and Human Sciences (Philosophy)	2	1%
Total	**308**	**100%**

This research has chosen a descriptive scope framed in a non-experimental design. The data collection was obtained through a digital survey applied. This instrument was filled out with students who voluntarily decided to participate This study had non-probabilistic sampling of an intentional type and subject to availability; demographic variables of the sample can be evidenced in **Table 1** and **2**.

The participants were 500 undergraduate students who accessed the xMOOC, of which 308 answered the perception survey. All students belonged to different academic programs of the subject Basic Digital Competences (CBD), during the first half of 2017. The distribution of the population by career is shown below. The xMOOC was used by students in settings outside the classroom such as home, library, cafeterias and means of transport, because it was designed to be accessed at any time and from different devices.

For this research, the following categories were established: Learning experience, usefulness, motivation, information management and access to the xMOOC.

- Learning experience: This variable aimed to determine the degree of contribution to learning in the search for information by asking questions with a Likert scale. The questions related to this category were oriented to the students' perception of the instructions, activities and the contribution to the learning with the xMOOC.

- Utility: This category focused on the utility of the xMOOC for student learning, using questions with Likert scale (5 being the highest value and 1 the lowest). A high score indicated a high sense of utility and a low score indicated little utility. The questions of this item were directed to determine the perception towards the usefulness of the xMOOC resources and learning.

- Motivation: The questions asked focused on general motivation when using the xMOOC and whether the proposed challenges were interesting for students. In this category a high score indicated high motivation and a low score indicated poor motivation, through questions with likert scale.

- Information management: This category pursued to determine the contribution of the xMOOC to the process of searching and analyzing information, although this was not the main focus of the research as already mentioned.

Table 3. Matrix of components, own elaboration

Communes analysis of major components		Extraction
Information management	Understanding the process of finding information	0.71
	Strengthening the competence of information management	0.708
	Capacity of information search	0.693
Utility	Usefulness of learning	0.702
	Usefulness of learning resources	0.734
	Interest in learning	0.722
Learning experience	Contribution to learning	0.644
	Understanding of the instructions for the competence of information management	0.581
	Challenge incentive in learning	0.963
Motivation	Capacity of entertainment	0.706
	Ability to enjoy the challenges	0.668
	Motivation	0.71
Other	Access	0.568

- Access: This category inquired about the devices used to enter the xMOOC, measuring frequency of use and places of access.

The questionnaire of perception was composed of 24 questions: 13 questions using a likert scale of five options was used (always, almost always, sometimes, almost never and never), 7 questions were of unique selection to know the options of access to the xMOOC. They were also asked to justify some of the answers, in order to deepen in the categories of learning experience, utility and motivation.

Instrument

In order to know the reliability and consistency of the questionnaire, the Cronbach's alpha statistics were applied to the 13 Likert scale questions. Obtaining a value of 0.913, which indicates that it has a good reliability and the instrument achieves the purpose measurement for which it was designed.

To examine the validity, an exploratory factorial analysis was used; the analysis of the principal components; the adequacy index sample (KMO = 0.906) and the Barlett sphericity test [Chi-square approximation 1504,557;78;p<000], which shows data suitable for analysis. The components analysis showed three factors that explain 70.072% of the variance, the first being the xMOOC learning experience with 5 items (54.123%), the second the utility in the comprehension of the information management process with 6 items (8.231%) and the last of a single item was the incentive for the learning challenge (7.718%). The matrix of components indicates that the best values explained by the variance are: Incentive to the learning challenge (0.963), utility of the xMOOC resources to learning (0.734), interesting learning (0.722), comprehension of information retrieval process 0.71), strengthening of information management (0.708) and motivation (0.71), as shown in **Table 3**.

In the reliability analysis of the elements, it is observed that the values fluctuate between 0.904 and 0.906 when items of Cronbach's alpha indexes are eliminated, these values are lower than the consistency index of the instrument, which confirms that these elements provide reliability to the construct (see **Table 4**).

RESULTS

Given the reliability of the instrument, it is interesting to know the aspects in which the students expressed higher or lower perception regarding the contribution and use of the xMOOC in their learning process.

Table 5 indicates the descriptive statistics of the instrument. Students state a greater understanding of the information search process (4.02), information management strength (3.92) and information search capability (3.92). The lowest values correspond to the motivation and the use of the xMOOC (3.34) and the ability to enjoy the challenges (3.50), although these values do not deviate from the overall factor mean (3.78).

Table 4. Analysis of reliability, own elaboration

Category	Item	Scale mean if item deleted	Scale variance if item deleted	Corrected total item correlation	Cronbach's Alpha if Item deleted
Information management	Understanding the process of finding information	45.88	69.246	0.7	0.904
	Strengthening the competence of information management	45.99	69.842	0.674	0.905
	Capacity of information search	45.97	70.118	0.677	0.905
Utility	Usefulness of learning resources	46.04	68.461	0.795	0.901
	Usefulness of learning	46.16	68.133	0.747	0.902
	Interest in learning	46.15	67.576	0.727	0.903
Learning experience	Contribution to learning	45.99	69.537	0.704	0.904
	Understanding of the instructions for the competence of information management	46.11	70.541	0.664	0.906
	Challenge incentive in learning	46.28	83.15	-0.128	0.934
Motivation	Capacity of entertainment	46.12	68.437	0.689	0.904
	Ability to enjoy the challenges	46.4	68.829	0.709	0.904
	Motivation	46.53	67.301	0.708	0.904
Other	Access	46.1	71.933	0.69	0.906
				Average	**0.906**

Table 5. Descriptive statistics, own elaboration

Category	Item	N	Minimum	Maximum	Mean	Typical deviation
Information management	Understanding the process of finding information	308	1	5	4.02	1.022
	Strengthening the competence of information management	308	1	5	3.92	1.04
	Capacity of information search	308	1	5	3.92	1.006
Utility	Usefulness of learning resources	247	1	5	3.87	0.998
	Usefulness of learning	308	1	5	3.86	0.962
	Interest in learning	308	1	5	3.77	1.171
Learning experience	Contribution to learning	308	1	5	3.83	1.022
	Understanding of the instructions for the competence of information management	308	1	5	3.81	0.976
	Challenge incentive in learning	232	1	5	3.72	0.95
Motivation	Capacity of entertainment	308	1	5	3.78	1.155
	Ability to enjoy the challenges	308	1	5	3.5	1.081
	Motivation	308	1	5	3.34	1.174
Other	Access	308	1	5	3.81	0.779

Access and Flexibility of xMOOC

The results of the xMOOC access questions formulated as a single choice are shown in **Table 6**.

In first place 68% of the students accessed the xMOOC from a laptop, probably because many of them have these equipments and also because the University facilitates these devices. In second place is the access from desktops with 27% and with the use of mobile devices there is a 6% between cell phones and tablets. This possibly indicates that the usability of the xMOOC for mobile devices should be improved. As for the places where they did the xMOOC, 70% of students preferred to do the challenges at home and it was observed that 73% dedicated one day a week to solve the challenges.

As for flexibility, 31% of the students replied that it is flexible in terms of access to knowledge. The items corresponding to the access from different places obtained 27% and the availability of the application 24%, these two with close percentage values, and the last item, the access from different devices with 19%, although as mentioned, the use of mobile devices should be encouraged.

Table 6. Access results to the xMOOC. Own elaboration

From which devices did you access the xMOOC?			Percentage
Laptop		208	68%
Desktop PC		82	27%
Cell phone		11	4%
Tablet		5	2%
Didn't answer		2	1%
	Total	308	100%
Where did you solve the challenges of xMOOC?			**Percentage**
At home		215	70%
At the university		63	20%
In class		23	7%
In the library		5	2%
In a means of transport		2	1%
	Total	308	100%
How often did you access the xMOOC to work on the activities?			**Percentage**
Once a week		225	73%
twice a week		56	18%
Between 3 to 5 days a week		19	6%
Never		5	2%
Every day of the week		3	1%
	Total	308	100%

Table 7. Aspects do you consider the xMOOC is flexible

In what aspects do you consider the xMOOC is flexible?			Percentage
Access to knowledge		94	31%
Access from different places		82	27%
Availability		73	24%
Access from different devices		59	19%
	Total	308	100%

Table 8. Results of correlations between variables. Own elaboration

2017-1						
Correlations						
SEX	**N**		**Mean**		**Typical deviation**	
Category of analysis	**Women**	**Men**	**Women**	**Men**	**Women**	**Men**
Information management	190	118	120,211	115,763	283,022	259,654
Utility	190	118	77,842	73,814	195,472	191,226
Learning experience	124	54	155,645	149,444	253,509	254,334
Motivation	190	118	108,947	101,525	305,323	308,187

Correlation between Variables

Once the items in which the students showed a higher preference were determined, it was important to determine the presence or absence of correlation between the demographic variables and the categories of analysis. In this sense, it was observed that there were no significant correlations between the sex variable and the categories analyzed ($p > 0.6$ in all cases), although tendencies were perceived, such as women punctuating higher in information management and motivation than men (see **Table 7**). There were no significant correlations between the categories of analysis and age ranges.

In this way, from the students' perception it can be indicated that the created xMOOC is seen as a useful resource for teaching and learning the various aspects that encompass the informational dimension, without ignoring that maintaining the good technological performance of this scenario may be the key to future implementations.

Descriptive Analysis

The questionnaire included open-ended questions for students to express their opinions on learning the informational dimension, utility and their learning experience mediated by the xMOOC.

As for a favorable perception of the informational dimension learning, the students made comments such as: "With this game, it increased my knowledge since it gave me a lot of information through a game", "It helped me to understand easier the topics", "Yes because it taught me the good management of the information, its search and references", "at the moment of carrying out the challenges you can take into account what to do and not during the information searches", "it taught me a lot, to learn how to use techniques that would serve me throughout my career and to identify in what kind of case I was in". "Entertaining and different. We should continue using it, however to make learning more complete the teacher should provide feedback". "It helped me a lot to understand how the references of the different documents were done, the search and management of information".

In the same way, less favorable comments were evident: "It seems to me that even if it had its degree of difficulty, perhaps the design of the page or activities made me feel like training younger children, not university students. "The tool is useful but I do not consider it very suitable the way it is arranged (children's game)". "It looks like an assignment more and not as a tool to learn".

On the utility some students mentioned that "The xMOOC was very useful for my learning, since I understood fundamental elements for the successful development of my career", "That very useful since in the university it is necessary to know how to reference correctly and with this platform it can be done in a dynamic way". "The truth is that it never helped me for the subjects that I´m in". "It was useful, because I learned different things that help my learning grow and I had to search in Internet many times to answer".

The students also made unfavorable comments on the utility of the xMOOC: "I did not find it very useful or appropriate for an university subject". "The tool is useful but I do not consider very appropriate the way in which it is arranged (children's game)". "I feel that the program is not very useful to stimulate my learning".

When students were asked to describe how the experience of learning with the xMOOC was, some mentioned: "It was fun, interesting but it did not always include relevant topics". "It was interesting the fact that leaning was done in a dynamic and interactive way, it was an enjoyable method to motivate students". "Learning was given in a fun and creative way, leaving a part the traditional methods". "A little tedious, since when I was wrong, I often had to start from the beginning, erasing the advances that I already had "I found the experience very pleasant and dynamic to teach students the importance of referencing each one of the files, documents or assignments, as good as it can be done. The only flaw is that the platform is quite slow, so it is uncomfortable to solve the challenges".

CONCLUSION AND DISCUSSION

Although MOOCs have been considered as a 21st century emerging virtual environment that supports learning and motivates students by creating a variety of learning strategies and streamlining processes; It is found that within the framework of this research (Castaño, Maíz, & Garay, 2015; Magen-Nagar & Cohen, 2017), not necessarily all MOOCs can lead to a high degree of motivation, which generates uncertainty and generates prospective to consider new research that can analyze, how much is the student motivation influenced by the instructional design applied in a MOOC, and whether this is a standard in all types of MOOCs?

As mentioned in the theoretical framework, motivation has intrinsic and extrinsic components which complement and result in student autonomy (Abeer & Miri, 2014; Brahimi & Sarirete, 2015; Castaño, Maíz, & Garay, 2015). Using an xMOOC is certainly a new way of learning, which does not necessarily translate to the student committing himself to his own learning (Abeer & Miri, 2014). Presenting the importance of considering, are xMOOCs a medium that promotes autonomy in learning?

It is important to note that xMOOCs are characterized by encouraging behavioral learning (Kesim & Altınpulluk, 2015), which does not foster dialogue and peer communication that is usually found in MOOCs (Castaño, Maíz, & Garay, 2015; Kellogg, Booth, & Oliver, 2014; Mak, Williams, & Mackness, 2010). This study has reaffirmed the importance of promoting such communication channels; the generation of learning communities, and the constant feedback from peers and teachers, as it is reaffirmed in earlier research such as Morris and Stommel (2015), Margaryan, Bianco, and Littlejohn (2015), Abeer and Miri (2014). In this way

the communication strategies among students and teachers is considered as a limitation of the structure given to an xMOOC, it is recommended to examine this aspect of interaction for future implementations.

The research led to the conclusion that the xMOOC contributed to the understanding of the process of information search in the framework of the development of the Information Management Competency, although it is recognized that this type of xMOOC is not characterized for having a great variety of learning strategies; reflecting lack of motivation in students and loss of spaces for building collaborative knowledge. In the same way, it is important to mention the positive role of gamification in the development of this xMOOC, which was highlighted by some students, being a principle that enhances learning and increases motivation (Amir & Ralph, 2014; Conway, 2014; Hanus & Fox, 2015; Kapp, 2012). According to what was previously mentioned, for future implementations in the university field it is recommended to take this aspect into account.

It is also suggested to consider the training in the Information Management Competency as a key aspect of the skills required for the 21st century (Çoklar, Yaman, & Yurdakul, 2017; Shao & Purpur, 2016; Yu, Lin & Liao, 2017), which are not only necessary in students but are key for teachers (Negre, Marín, & Pérez, 2014; Siddiq, Scherer, & Tondeur, 2016; Wen & Shih, 2008). On the basis of the above, an xMOOC in higher education or for the training of teachers, as a means to learn such skills or abilities can be considered innovative and a challenge of curricular transformation for the university environment.

There is a growing trend in the field of MOOCs design, but there is still a need to delve deeper into this field, giving place to generating innovative processes in the classrooms, not only universities but schools and institutions that are dedicated to teach, learn and train. It is important to continue studying the integration of xMOOCs into student learning success, as it has been the trend in previously developed MOOCs (Ferdig, 2013; Ferdig, Pytash, Merchant, & Nigh, 2014).

Disclosure statement

No potential conflict of interest was reported by the authors.

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