

## The ECO European Project: A New MOOC Dimension Based on an Intercreativity Environment

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### ABSTRACT

The ECO European Project funded by the European Commission is dedicated to bringing MOOCs to a new dimension by taking advantage of the new possibilities offered by the Social Web (O'Reilly, 2005). This paper focuses on the intercreative aspects of MOOCs. It takes a look at the characteristics of the new ECO MOOCs to see if they are designed and implemented within an intercreative environment. The methodology is quantitative and data collection was conducted using self-administered questionnaires with closed or semi-closed questions. This study includes the so-called sMOOCs, which stress intercreativity to work towards collective intelligence.

**Keywords:** Intercreativity, sMOOC, MOOC, collective intelligence, e-learning, m-learning

### INTRODUCTION

The ECO project (eLearning, Communication and Open-data: Massive Mobile, Ubiquitous and Open Learning) was created to design and implement MOOCs in regional hubs with the ultimate goal of showing teachers at all educational levels how to organise, design and develop their own MOOCs using mobile technology. The project is funded by the European Community “Competitiveness and Innovation Framework Programme” (CIP). Theme 2: “Digital content, open data and creativity”. Obj. 2.3.a: “Piloting and showcasing excellence in ICT for learning for all”. The purpose of the initiative is to extend to a pan-European scale the most successful MOOC experiences in Europe. ECO will help increase awareness of the benefits of Open Educational Resources (OER) for citizens and institutions. The ECO MOOCs are based on the idea of accessibility, i.e. removing barriers in teaching-learning processes for all kind of users: people with special needs and those at risk of exclusion due to social status, age, etc.

The project is a consortium of twenty-two partners: eleven universities and two specialised higher education centres from six countries, seven small and medium enterprises specialised in social media, and institutions from outside of the EU. The MOOCs are offered in six different languages: English, Spanish, French, German, Portuguese and Italian. The ECO project started in February 2014 and will last for three years.

**Table 1:** The ECO project partners (Osuna & Coord., 2014).

Part. no.	Participant Organisation Name	Participant Short Name	Country
<b>Universities and other Specialized Centres of Higher Education</b>			
1	Universidad nacional de educación a distancia	UNED	Spain
2	Open Universiteit Nederland	OUNL	Netherlands
3	Universidad de Valladolid	UVA	Spain
4	The University of Manchester	UOMAN	England
5	Universidade Aberta	UAB	Portugal
6	Universidad de Oviedo	UNIOVI	Spain
7	Politecnico di Milano	POLIMI	Italy
8	Universidad de Zaragoza	UNIZAR	Spain
9	Universidad de Cantabria	UNICAN	Spain
10	Fundacion Universidad Loyola Andalucía	LOY	Spain
11	Sünne Hanna Eichler	SE	Germany
12	Universite Paris III Sorbonne Nouvelle	SOR	France
13	Vereniging van European Distance Teaching Universities	EADTU	Netherlands
<b>Specialized SME of the Social Media</b>			
14	Montiel Molina Vicente	TABARCA	Spain

15	Telefónica Learning Services S.L.	TLS	Spain
16	Fedrave	FEDRAVE	Portugal
17	Humance AG	HUM	Germany
18	Prisma Vista Digital S.L.	RIV	Spain
19	Reimer IT Solutions B.V.	REIMER	
20	Geographica	GEO	Spain
<b>Extra-communitarian Institutions</b>			
21	Universidad de Quilmes	UNQ	Argentina
22	Universidad Manuela Beltrán	UMB	Colombia

Reports discussing MOOCs, such as “MOOCs and Open Education: Implications for Higher Education” published by Li Yuan and Stephen Powell in March 2013 and “MOOCs. Massive Online Courses” developed by Michael Gaebel in January 2013 (updated in 2014), have shown that most MOOCs are designed following traditional formal education methodology despite using ICT. The ECO project wishes to break with conventional teaching and learning to expand human intellectual capacity. The ECO MOOCs are based on Connectivism (Siemens, 2004) and Social Constructivism (Vygotsky, 1978). Both theories advocate intercreativity environments where students create learning communities to build knowledge and social engagement. “Viewing learning and knowledge as network phenomena alters much of how we have experienced knowledge in the last century” (Siemens, 2006, p.vii). These environments will help develop the collective intelligence of all the participants.

This study explores variables that promote intercreativity, such as collective intelligence and communication and interaction, in the fifteen MOOCs offered by ECO to determine whether they have been designed following a new teaching and learning system where teachers and students are *prosumers* (Toffler, 1980).

### THEORETICAL FRAMEWORK

MOOC (Massive Open Online Course) is a recent acronym coined in 2008 by Dave Cormier when nearly 2,300 people enrolled in “Connectivism and Connective Knowledge (CCK08)”, an online course organised by George Siemens and Stephen Downes. There are many definitions of what a MOOC is. Some examples include: “MOOCs are a technology-enabled development of the slightly longer-lived open educational resources movement that has provided access to many of the supporting materials used in higher education teaching programmes” (Lane, 2008); “A MOOC is an online course with the option of free and open registration, a publicly-shared curriculum, and open-ended outcomes” (McAuley, Stewart, Siemens, & Cormier, 2010, p. 10) and “it is an online course designed for large number of participants that can be accessed by almost anyone anywhere, as long as they have an internet connection, is open to everyone without entry qualifications and offers a full and complete course experience online for free” (Fueyo, et al., 2015) given by the ECO project.

Since the term originated MOOCs have been categorized into different types depending on their pedagogical model. The largest groups are the cMOOCs and the xMOOCs. The first to be used in 2008 were cMOOCs thanks to the “Connectivism and Connective knowledge” course taught by Siemens and Downes and developed by the University of Manitoba. Its pedagogical model was based on the theory of Connectivism posed by George Siemens in 2004. Its main focus was the significance of social platforms and networks, such as blogs, wikis and forums, where content, students and learning communities connect with each other to create joint experiences and knowledge. It was based on the philosophy of a horizontal and bidirectional learning atmosphere. Siemens (2012) highlighted that their model emphasizes creation, creativity, autonomy, and social networked learning. The first xMOOC appeared in 2011 when the “Artificial Intelligence” course given by Thrun and Norving at Stanford University was created. According to Daniel (2012) this model followed a more behaviourist approach than the cMOOCs. It was based on a “conductist” or traditional educational model where teachers offered the content and created knowledge and students remained passive. Their system was vertical, lineal and unidirectional.

It is possible to talk about a third type of MOOC, the sMOOC, which is the basis for the ECO project. As explained in section D2.2 ‘Instructional design and scenarios for MOOCs’ “the ECO sMOOC is social because the learner is put central in a social networking approach, learning through interaction and conversation with other learners and seamless because of the inclusive model and approach that crosses borders and allows access across devices” (Fueyo, et al., 2015). A sMOOC follows the culture of participation, specifically “there are no barriers to citizen expression, it supports creativity and sharing of individual and collective creations. Individuals believe in the importance of their contribution and feel a connection between what people say and their own contributions” (Aparici & Osuna, 2013, p. 138). The ECO MOOCs are both social and seamless, which is why they are called sMOOCs, and offer a new perspective that differs from others. “ECO sMOOCs are “social”

since they provide a learning experience marked by social interactions and participation, and “seamless”, since ideally they should be accessible from different platforms and through mobile devices and integrate with participants’ real life experiences through contextualisation of content via mobile apps and gamifications” (Fueyo, et al., 2015, p. 8).

The ECO sMOOCs present the following main characteristics: they are multilingual courses designed with special attention to both people in risk of social exclusion and people with visual and hearing disabilities; they facilitate interaction, communication and feedback with other students doing the course and with the academic staff; they promote collaboration, creativity and personal reflection; the learning environment facilitates participation in a multicultural context and a variety of scenarios, game-based exercises and technologies; they allow maximum accessibility and usability and are available on mobile devices; the courses structure is flexible and based on Constructivism, Connectivism and social networking where everybody being involved is *EMEREC* (Cloutier, 1973).

One of the main characteristics of sMOOCs is intercreativity. Tim Berners-Lee came up with the term in 1996 by joining the words interactivity and creativity. According to Camarero Cano (2014) it refers to the ability of individuals to create original and more productive elements within a virtual environment through collaboration and participation. The idea delves deeply into the creation process, from the birth of an idea, its development and until it is brought to a close. In short, it is a social process of creative exchange and a way to collectively build knowledge.

The main features that MOOCs must have to take place within an effective intercreative context (Camarero Cano, 2014) are:

- Communication must be horizontal and bidirectional: true communication is only possible when the receiver is also a transmitter. According to Kaplún (1998) this fact is essential as a source of pre-feedback in order to inspire messages.
- They should be established based on the Theory of Social Constructivism (Vygotsky, 1978): knowledge is acquired based on the relationship between the subject and their socio-cultural environment.
- They should be established based on the Theory of Connectivism (Siemens, 2004), which is defined as the amplification of learning, knowledge and understanding throughout a personal network (Siemens, 2004). Stephen Downes emphasises this idea when he says that “knowledge is distributed across a network of connections, and therefore that learning consists of the ability to construct and traverse those networks” (Downes, 2007).
- They must create collaborative learning communities: Students must be active agents responsible for their own learning (Freire, 2003). The learning environment must allow them to create learning-teaching communities where they can share their ideas and feedback, so they can make their knowledge grow. Engaged learning relies on collaboration among the members of the learning community (Conrad & Donaldson, 2004).
- Teachers and students must both be *prosumers*: teachers and students must both be producers of knowledge. “Digital convergence has eliminated the boundaries among different types of media, and has created the conditions in which that digital content can be distributed, shared and consumed across different networks” (Camarero Cano, 2014) making it possible for everyone involved in the learning environment to be a *prosumer*.
- The concept of ICRT (Information + Communications + Relation + Technology) (Gabelas, Marta-Lazo & Aranda, 2013) is useful here. It proposes an evolution of ICT (Information Communication Technology) to ICRT by introducing the “*Relational factor*”. “Students become autonomous, critical and learned beings that develop strategies. In this process of building competencies or skills the *R Factor* acts as a relational force in the horizontal and dialogical dynamics, which are amplified and redimensioned within the digital environment” (Gabelas, Marta-Lazo, Hergueta, 2013).

If these characteristics are applied, the sMOOCs will be created based on an intercreative pedagogical system. Transmissive educational values are thus left behind and a new way of learning and teaching, typically found in “techno-social communities”, is given an opportunity (Camarero Cano, 2015). This is in line with Piaget’s idea: “to understand is to discover, or reconstruct by rediscovery, and such conditions must be complied with if in the future individuals are to be formed who are capable of production and creativity and not simply repetition” (1973, p. 20).

It is important to bear in mind that the Internet has permeated every single aspect of our lives. That is why it must be used extensively in education. As Manuel Castells referred: “Internet is now, and will become even more so in the future, an essential means of communication and interaction in this new kind of society we live in that I call the network society” (Castells, 2001, p. 1). sMOOCs take advantage of every educational resource

(ICT, OER) available on the Web. A learning community needs these resources to be intercreative and to encourage the culture of participation, which in social media would require the following changes:

- “fewer barriers to citizen expression,
- web 2.0 in general and social media in particular will be the platform for generating creativity and sharing knowledge,
- greater value will be given to experience and
- the opinions and recommendations of our peer will be considered as a way to jointly build a new fairer and more democratic society” (Aparici & Osuna, 2013, p. 142).

If this intercreative environment is achieved, it will be possible to talk about collective intelligence and therefore, about a common brain. No one knows everything, but everyone has certain skills and some knowledge. Collective intelligence is much more than the sum of individuals. If everyone joins in and shares their bit of knowledge society will be one step closer to achieving one stronger common force with everyone working in the same direction (Lévy, 2004).

### RESEARCH METHODOLOGY

The general objective of this study was to analyse different dimensions in the fifteen MOOCs offered by the ECO project that promote intercreativity and contribute to developing factors such as collective intelligence.

The specific objectives were:

- To examine the gender of the students enrolled in the MOOCs.
- To evaluate content assessment.
- To analyse course content.
- To study communication e interaction.
- To evaluate user satisfaction.

This research was a first approach to the study of intercreativity. The methodology used here was quantitative and once the results were analysed a second part that focuses on the qualitative aspects will be conducted. Finally, both results will be contrasted for a more complete evaluation of the data. This paper focuses on the first part of the research. Data was collected using a self-administered questionnaire with closed or semi-closed questions. It was deployed using the LimeSurvey open source platform and the data collected was analysed with SPSS (Statistical Package for Social Sciences).

Firstly, gender was determined to find out how many women and men took the course. Secondly, the following categories were evaluated for the intercreativity-related dimensions in the fifteen ECO project sMOOCS.

**Table 2:** The dimensions and categories evaluated.

<b>Dimensions</b>	<b>Categories</b>
Content assessment	<ul style="list-style-type: none"> <li>- suit the course</li> <li>- are interesting</li> <li>- are rigorous</li> <li>- are up-to-date</li> <li>- accessible to all people</li> </ul>
Content course	<ul style="list-style-type: none"> <li>- Technical problems support</li> <li>- Suitability of tasks and games</li> <li>- Platform usability</li> <li>- Design of collaborative tasks</li> <li>- Videos subtitles</li> <li>- Responses given by teaching team</li> <li>- Design of individual tasks</li> <li>- Load distribution during the course</li> <li>- Audiovisual materials</li> <li>- Documents provided</li> <li>- Videos and video lectures</li> </ul>
Communication e interaction	<ul style="list-style-type: none"> <li>- Social interaction and support given by other participants</li> <li>- Posts and comments made by students</li> <li>- Posts, educational artefacts and shared resources</li> <li>- Feedback and comments on the work done</li> </ul>
User satisfaction	<ul style="list-style-type: none"> <li>- Designed to achieve the proposed objectives</li> <li>- Promotes learner creativity</li> <li>- Promotes discussion and personal reflection</li> </ul>

	- Promotes learner engagement
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Given its universal scope and the diversity of the courses, a tool had to be designed that:

- “Could be applied to all MOOCs.
- Allows comparison of results across different MOOCs.
- Allows information to be gathered about the people using the MOOCs
- Allows collecting opinions from the participants in the MOOCs.
- Is easy and quick to answer, given that those who participated in the MOOCs come from very different situations, cultures and professional experiences.
- Covers the main dimensions of interaction with MOOCs.
- Does not include aspects and features of the MOOCs that can be monitored using other sources of information, such as the trail left by participating in tasks, forums or quizzes, or information that can be extracted from learning analytics, etc.
- Allows evaluation of the instrument itself, with a view to its application in future pilots in the ECO project” (Fueyo, et al., 2015).

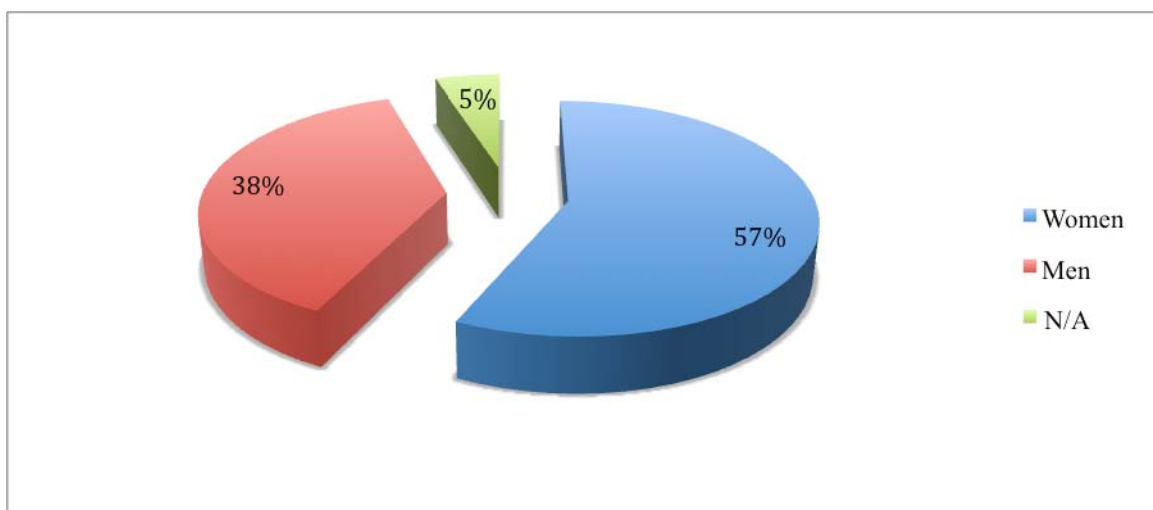
The sample used was the fifteen MOOCs in six different languages offered by the ECO Project:

1. Alfabetización Digital para Personas en Riesgo de Exclusión: Estrategias para la Intervención Socioeducativa.
2. Competencias creativas para el profesorado (Creativity MOOC Camp).
3. Competências digitais para professores.
4. Comunicación y aprendizaje móvil.
5. DIY Education aux médias et à l’information.
6. ELearningProjektmanagement an Schulen.
7. Flipped Classroom.
8. Innovación Educativa y Desarrollo Profesional. Posibilidades y límites de las TIC.
9. Introdução aos Sistemas de Informação Geográfica.
10. M'appare il mondo: dalle carte alla Terra digitale partecipata.
11. PreCalculus: Introduzione alla Matematica per l'Università.
12. MPSW: “Ma pédagogie à la sauce web 2.0”.
13. Necessidades Educativas Especiais. Como ensinar, como aprender.
14. Recursos Educativos Abiertos. Aplicaciones pedagógicas y comunicativas.
15. Videos for teaching, learning and communication.

**FINDINGS**

Below is a summary of the results for each variable related to intercreativity:

A total of 289 people completed the questionnaire: 57% were women, 38% were men and 5% either did not answer the question or declined to.



**Figure 1: Gender**



Most of the participants gave positive values when assessing the content. Five aspects were taken into consideration: ‘suitability of the course topic’, 87% of the people gave a favourable assessment whereas the opinion of 10% was negative; ‘Content is interesting’, 87% was favourable while 10% was negative; ‘Content is rigorous’, 82,5% offered a positive assessment while 14% was negative; ‘Content is up to date’, 88% favourable assessment and just 9% negative; and the biggest criticism was for ‘Content is accessible to all people’, where the assessment in 72% of the cases was favourable and in 24% it was negative because the course content was not always accessible by people with different learning experiences.

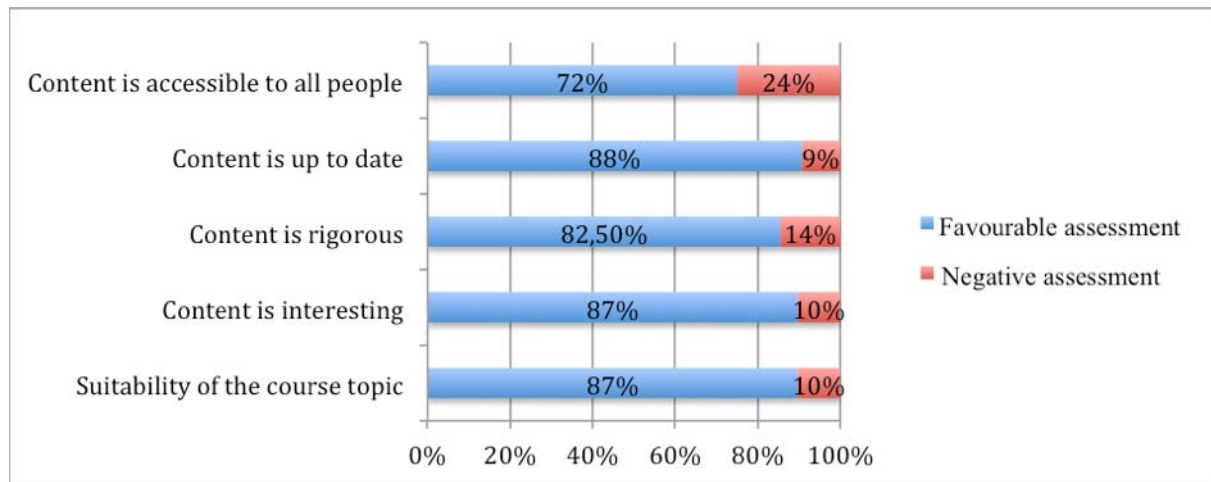


Figure 2: Content assessment.

When it comes to course content the picture was different: on one hand, satisfaction was high regarding the material prepared for each course (videos, video lectures, documents); on the other hand, users were more critical of the technical infrastructure, platform usability, technical support and the design of collaborative tasks. It is important to keep in mind that a high percentage of students did not answer due to lack of technical experience and this should be considered a training obstacle more than a technical problem.

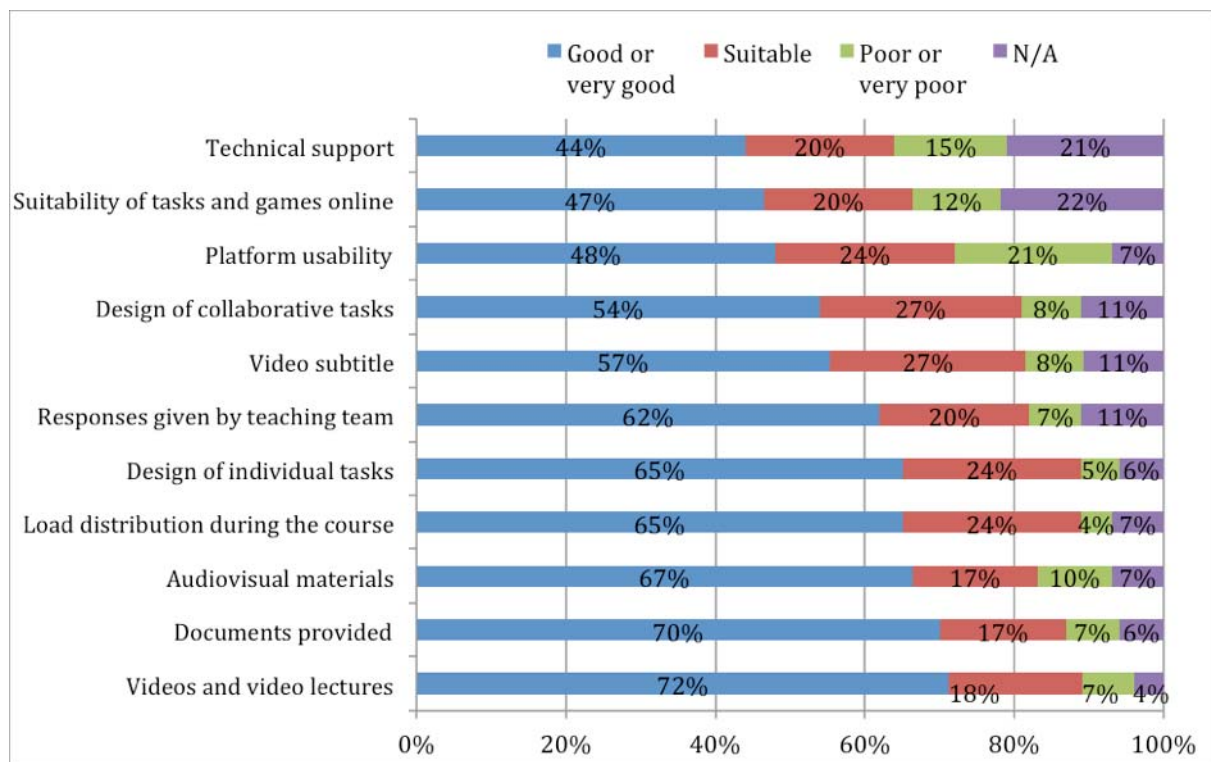
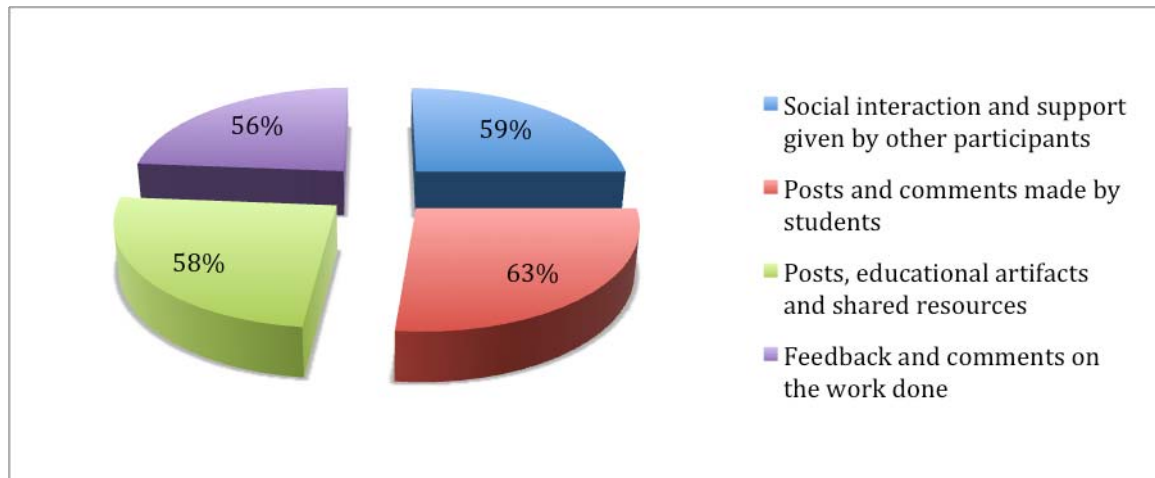


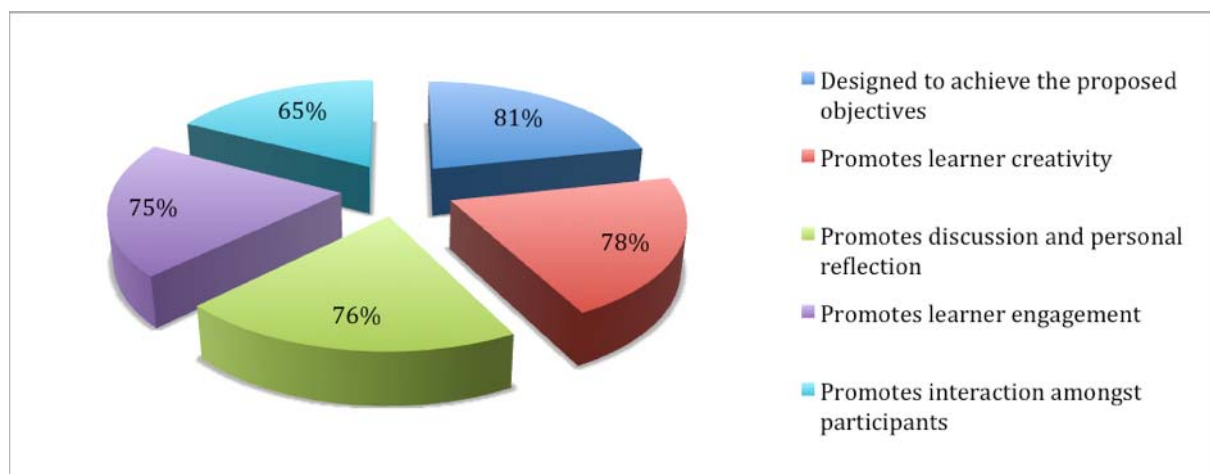
Figure 3: Course content.

The feedback given regarding course communication and interaction was mainly positive. When considering the four aspects within this variable, the courses were seen as participative and encouraging social engagement. However, continual improvement in this area is needed to achieve higher levels of satisfaction.



**Figure 4:** Communication and interaction.

User satisfaction focused on expectations, creativity, discussion and personal reflection, and engagement and interaction among participants. The five aspects received favourable reviews and verify that the design of the courses actively enhance these points.



**Figure 5:** User satisfaction.

## CONCLUSIONS

The overall results showed that the ECO project sMOOCs were designed and implemented under the prism of intercreativity. The content of the courses, the way they are presented, and the teaching and learning methodology used, based on Constructivism and Connectivism, are part of an attempt to develop the courses taking into account the characteristics of intercreativity. A strong facet of these courses is that they promote interaction among students and teachers, turning both into active producers of knowledge. It was apparent that the courses have a high ability to spark discussion and personal reflection, critical thought and creativity. The areas that need improvement are mainly technical. Specifically, the courses must be easily accessible for those with special needs, such as people with visual and hearing impairment; and should provide access to the courses from all kinds of devices.

Despite the positive results with regard to intercreativity, work must continue for improvement. This would include, first, “to adapt the intercreative learning to the different multiple intelligences (Gardner, 1983) that each person has” (Camarero Cano, 2014), and second, to bear in mind the four pillars of learning proposed by Jacques Delors: learning to know, learning to do, learning to live together and learning to be (Delors, 1996).

A new qualitative study of intercreativity in the sMOOCs of the ECO project has been launched. The results of both will allow new strategies to be designed and implemented to improve the next iterations of the courses.

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