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The effects of learner-generated videos for YouTube on learning outcomes and satisfaction

Carlos Orús [a, *], María José Barlés [b], Daniel Belanche [c], Luis Casaló [b], Elena Fraj [a], Raquel Gurrea [a]

[a] Faculty of Economy and Business, Universidad de Zaragoza, Gran Via 2, 50005, Zaragoza Spain
[b] Faculty of Business and Public Management, Universidad de Zaragoza, Plaza Constitución s/n, 22001, Huesca Spain
[c] Faculty of Social and Human Sciences, Universidad de Zaragoza, Ciudad Escolar s/n, 44.003, Teruel Spain

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ABSTRACT

This paper presents the results of an educational innovation project based on learner-generated videos. The videos were created for a YouTube channel specifically developed for a marketing course. Despite the potential of YouTube as a learning tool in education, its use as a learning instrument for learner-generated content is scarce. In this project, students could voluntarily participate in the creation of videos, which were then uploaded to the channel by the professors. At the end of the course, students completed a questionnaire assessing learning outcomes and satisfaction. The findings showed that active participation had a direct influence on the perceived acquisition of cross-curricular competencies and on academic performance. While participation did not directly increase subjective learning or satisfaction with the course, it had an indirect influence through cross-curricular competencies. This research contributes to previous literature by showing how learner-generated content and the use of YouTube as a teaching vehicle has a positive impact on students' learning outcomes and satisfaction.

1. Introduction

Academic institutions are increasingly integrating new information and communication technologies (ICTs) in their educational systems (e.g. e-learning platforms, tablet PCs, instant messaging software, videogames, virtual reality) (Blasco-Arcas, Buil, Hernández-Ortega, & Sese, 2013; Dündar & Akçayir, 2014; Ferrer, Belvís, & Pàmies, 2011; Ifenthaler & Schweinbenz, 2013; Merchant, Goetz, Cifuentes, Keeney-Kennicutt, & Davis, 2014; Sivula, 2011). ICTs are a fundamental tool to support learning activities (e.g. Huffman & Huffman, 2012; Krauskopf, Zahn, & Hesse, 2012; Torres-Ramírez, García-Domingo, Aguilera, & De La Casa, 2014). According to Mishra and Koehler (2006), technology plays a determinant role for developing good teaching. By combining content, pedagogy and technology, the use of ICTs, compared to more traditional means of education in the classroom, encourages students' motivation and improves their learning outcomes. Recently, Schmid et al. (2014) carried out a meta-analysis to analyse the use of technology in postsecondary education for teaching and learning purposes. They considered experimental studies published from 1990 to 2010 comparing high and low technology

* Corresponding author.
E-mail addresses: corus@unizar.es (C. Orús), mjbarles@unizar.es (M.J. Barlés), belan@unizar.es (D. Belanche), lcasalo@unizar.es (L. Casaló), efraj@unizar.es (E. Fraj), gurrea@unizar.es (R. Gurrea).

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use (also no technology use). The authors concluded that learning is best supported when the student is engaged in active, meaningful exercises via technological tools that provide cognitive support.

Most importantly, the use of ICTs can facilitate students' active learning (Esteve Mon & Gisbert Cervet, 2011). This issue is especially relevant in the new context in higher education. The development of Web 2.0 tools and the incorporation of "digital natives" as students are changing the traditional teaching and learning paradigms (Lee & McLoughlin, 2007). In this new context, learner-generated content plays a major role in active learning processes. However, previous studies about this topic show unclear results, with some authors supporting ICTs as an effective tool for active learning (e.g. Lee & McLoughlin, 2007; Pereira, Echeazarra, Sanz-Santamaría, & Gutiérrez, 2014), and others finding difficulties and failures with the generation of educational content by students. Students and professors may not perceive the value of using Web 2.0 technologies (Bennet, Bishop, Dalgarno, Waycott, & Kennedy, 2012); they may also have ease-of-use concerns, self-confidence issues or simply a lack of interest (Cole, 2009). In addition, the generation of ICT contents could be particularly effective to develop students' competencies usually less promoted in academic courses (e.g. technological and social skills, Fralinger & Owens, 2009). Therefore, there is a need for research investigating the impact of ICTs on education systems from the perspective of learner-generated content.

This research presents the results of an educational innovation project consisting of the students' generation of videos about theoretical concepts of a marketing course. The videos were meant to be uploaded to a YouTube channel specifically created for the course.

The goal of this research is to analyse the impact of the students' participation in this project on different learning and affective outcomes that are critical for active learning processes: perceptions of the acquisition of cross-curricular competencies, subjective learning, academic performance and satisfaction with the course. We also investigate the indirect effect of cross-curricular competencies on the relationship between the students' participation and their learning outcomes and satisfaction. The results of the teaching experience and of the analyses offer important implications and recommendations for the development of effective active learning activities based on learner-generated content.

2. The integration of ICTs in new educational models

In recent years, European higher education has progressively adapted to the Bologna directives within the European Higher Education Area (EHEA). This revised educational model relies on the acquisition of competencies by the student (Cano, 2008). The model implies that each degree outlines students' performance in terms of specific and cross-curricular competencies. While specific competencies focus on particular knowledge related to the fields involved in the degree, cross-curricular competencies are more general and can be defined as "the set of intellectual, personal, and social skills that all students need to develop in order to engage in deeper learning" (British Columbia Ministry of Education, 2013, p. 3). This learning should encourage students to look at problems from different approaches, to see the relationships between subjects and their own previous learning and personal experiences as members of larger social communities (British Columbia Ministry of Education, 2013). Thus, cross-curricular competencies transcend a particular field and have a multi-disciplinary nature (Parvu, Ipate, & Mitran, 2014). They involve social and interpersonal skills, skills to manage ICTs (Pereira et al., 2014), or general academic skills such as creativity (Azevedo, Apfelthaler, & Hurst, 2012; Parvu et al., 2014). In this way, previous research has evidenced that ICTs' integration in teaching can improve learning outcomes in terms of academic performance and acquisition of competencies (e.g. Dündar & Akçayir, 2014; Ferrer et al., 2011; Ifenthaler & Schweinbenz, 2013; Schmid et al., 2014; Sivula, 2011).

In addition, the EHEA implies a shift of the students' role in the learning process. The students move from being passive to active agents. This new role of students is related to "active learning" and "experiential learning" approaches. On the one hand, active learning is defined as "anything that involves students doing things and thinking about the things they are doing" (Bonwell & Eison, 1991, p. 2). Active learning is associated with learning by doing. It requires activities that challenge the learners to perform tasks to engage in their own learning, such as problem-based learning, discovery learning, inquiry-based learning, games, writing papers or debating (Diepen, Stefanova, & Miranowicz, 2009). On the other hand, Boone (2011) refers to experiential learning as an experience-based approach to learning in which "students experience a direct encounter with the phenomenon under study, reflect on that experience, draw general conclusions, and test newly acquired knowledge through subsequent performance" (p. 2). Analysis of real-life situations, group projects, debates and role playing are examples of experiential learning activities where students need to apply their knowledge and skills in real and relevant environments (Alon & Herath, 2014; Hamer, 2000).

This shift in students' role in higher education is the consequence of two main factors: the development of ICTs and Web 2.0 tools, and the incorporation of "digital natives" as students (Gupta, 2014). The former improves interactivity in the classroom (teacher–student and student–student interactivity: Beauchamp & Kennewell, 2010; Cotner, Fall, Wick, Walker, & Baepler, 2008), facilitates access to and sharing of knowledge, and fosters collaboration (Pérez-Mateo, Maina, Guitert, & Romero, 2011), among other benefits. The latter implies a student who no longer wants to be a passive receiver of knowledge but demands continuous challenges to remain engaged in the learning process. They seek autonomy, connectivity, and socio-experiential learning; and importantly, they want to be noticed by others on the Web as part of the "exposure culture" (Lee & McLoughlin, 2007).

Following this idea, among the different tasks and activities that students can conduct in active learning and experiential learning environments (Alon & Herath, 2014; Lee & McLoughlin, 2007), learner-generated content has been increasing in

importance (Rodriguez, 2011). Students are encouraged to increase their level of involvement by producing and publishing their own content through simple tools (Pérez-Mateo et al., 2011).

Recent research has acknowledged the importance of Web 2.0 tools to facilitate the creation of learner-generated content, which improves students' performance and learning. Lee and McLoughlin (2007) presented examples of learner-generated content activities carried out in higher education institutions, such as the use of wikis, audio podcasts, or social networking, that enrich students' experience. Gupta (2014) developed a framework and proposed that the use of wikis, blogs and discussion boards can produce effective learning (in terms of cognitive, affective and meta-cognitive responses), as long as there is a fit between the characteristics of the technology and the pedagogical task. If there is a misfit, the use of technology may exert a negative effect on learning outcomes (e.g. students who are required to complete many discussion posts may perceive this as a tedious task).

However, current literature about learner-generated content is mainly theory driven or uses descriptive analysis of secondary data (Alpay & Gulati, 2010; Gupta, 2014; Lee & McLoughlin, 2007; Pérez-Mateo et al., 2011; Rodriguez, 2011), and empirical evidence shows unclear results about their benefits. Cole (2009) reported a failed experiment using Wiki technology to support student engagement and create student-driven course content. The author presented a set of reflections to help teachers understand the pitfalls of integrating social technologies in educational contexts. However, Junco, Heibergert, and Loken (2011) showed that Twitter can be used as an educational tool to help engage students and to mobilize faculty into a more active and participatory role. Bennet et al. (2012, p. 533) also highlighted "the potential learning benefits that can come from effective use of Web 2.0" mainly from students' content creation and sharing. However, they observed some barriers to the successful integration of Web 2.0 (e.g. lack of students' familiarity with the tools and of institutional support).

In this line, Clark and Mayer (2011) reflect on collaborative learning and advocate for a clear distinction about the role of these Web 2.0 in the design of the subject syllabus to ensure a proper operation. Rodriguez (2011) goes beyond the advantages and barriers of social networking applications and presents some concerns about the use of user-generated content in higher education, such as intellectual property rights, privacy and copyright laws. Alon and Herath (2014) also indicate that further research is needed to identify the effectiveness of using new technologies in experiential learning techniques. Therefore, the main challenge of this work will focus on clarifying whether the use of a Web 2.0 tool is advantageous or presents some problems for students in their learning process and for professors in their teaching.

2.1. The use of YouTube in education

The use of YouTube in class is a recent yet growing case in higher education (Alon & Herath, 2014; Chan, 2010; Fralinger & Owens, 2009; Krauskopf et al., 2012; Sherer & Shea, 2011; Torres-Ramírez et al., 2014; Tugrul, 2012). The integration of this ICT in the classroom is especially easy to implement due to the spread of low-cost digital recording tools (digital cameras and video cameras, mobile devices, etc.), the development of software such as streaming (i.e. watching video files or listening to audio files while downloading) and the potential of visual media for expression and communication (see Mayer, 2009 for an excellent review). Furthermore, YouTube is the third most visited website in the world, just behind Google and Facebook (Alexa, 2015), and watching videos online is a widespread trend in youth groups (ONTSI, 2011). In fact, "digital natives" are very familiar with these applications because they have grown up in a society characterised by new information technology (Chan, 2010).

Early evidence appears to show more positive effects than negative of the integration of YouTube (Clifton & Mann, 2011; Jenkins & Dillon, 2013; Pereira et al., 2014). Following the pioneering University of California (Berkeley) (www.youtube.com/UCBerkeley), other universities have launched their own YouTube channels with diverse application areas, such as medicine (Duncan, Yarwood-Ross, & Haigh, 2013), sciences (Everson, Gundlach, & Miller, 2013) and arts (Dewitt et al., 2013). Using YouTube as a platform to post educational videos may be beneficial: it facilitates the searching of videos about any topic, fosters student–student and teacher–student collaboration and helps its users' learning process (Fernández & Cejudo, 2009); sharing content in real time and getting feedback from students on the entire channel or on a specific video is also facilitated (Chan, 2010; Torres-Ramírez et al., 2014). According to YouTube's site, it is possible to gather information about the total number of views, the average display time per view, the total amount of time in hours that the video has been displayed, or the total number of comments posted.

Students also obtain satisfaction from the use of online videos for teaching (Torres-Ramírez et al., 2014; Tugrul, 2012). However, in most cases where YouTube and online videos are used to support teaching, students act as mere spectators of the materials. Even in these cases, the value of this technology has been demonstrated. Almécija, Maldonado, Muñío, Guadix, and Guadix (2010) created a YouTube channel to post videos regarding teams and processes in the food industry, given the difficulties of transporting students to real factories. The channel was appreciated by the students because the videos allowed them to become familiarised with the industrial reality. Clifton and Mann (2011) found that employing YouTube to teach about different nursing procedures increases accessibility to resources and students' attention and memory (it is easier to recall something that has been seen than heard; Mayer, 2009). Dupuis, Coutu, and Laneuville (2013) demonstrated that biology students who voluntary chose to watch the recommended online videos (which presented answers to several learning objectives) obtained higher marks than those who decided not to watch them. Finally, Kay (2012) offered a comprehensive literature review of studies focused on the use of video podcasts by students from different subject areas (including science and technology, arts, health, mathematics, business, and education). He found important benefits of this

teaching methodology such as control over learning, improved attitudes and learning behaviours, and increased learning performance.

Although watching videos may involve a certain degree of active and experiential learning (e.g. students analyse and evaluate the contents, interpret their meaning, answer the questions raised in the audio-visual material), the number of studies using YouTube as a tool for learner-generated content is more limited. Jenkins and Dillon (2013) proposed a project in which students created videos that were uploaded to YouTube and then presented and discussed in the classroom. The authors argued that this activity can be beneficial in building collaborative knowledge, especially in social sciences, humanities and education. However, the students' work, perceptions, and their learning outcomes were not examined. In the health sciences context, Fralinger and Owens (2009) implemented a similar project in which students used Microsoft MovieMaker to create videos and upload them to YouTube. At the end of the activity, the authors gathered descriptive and qualitative information from 81 students. They found positive results of learner-generated videos in generating interest, learning, achievement of objectives, and acquisition of skills or workgroup competencies.

Recently, Pereira et al. (2014) developed a project in which nursing students were asked to create online videos about different techniques of diagnosis. The authors showed that the activity improved the students' competencies compared to traditional teaching methods, and it also helped them to acquire the ability to search for information, to organise and solve problems, or to obtain technological skills. However, these results must be taken with caution since the study involved only 29 students and the videos were created in Babelium, an open-source software with a much lower impact than YouTube (Alexa, 2015). Finally, Alon and Herath (2014) adopted an experiential learning approach and reported a group activity in which students developed a social media plan (including a YouTube video) to promote the image of a specific country. They found that students had a positive attitude towards the exercise and perceived the learning experience as more productive and enjoyable than traditional learning experiences (e.g. lectures followed by examinations). However, the impact of the creation of the video on the students' acquisition of competencies and learning outcomes was not measured.

3. Current study and hypotheses

This research extends previous work and goes a step further in the development of teaching activities that promote students' learning based on learner-generated content. In our project, students worked in groups and created videos that were uploaded by the professors to a YouTube channel specifically developed for the course. In the videos, the students had to explain a theoretical concept of marketing.

Unlike previous studies, we empirically analyse the effects of students' role as content creators on several important aspects of learning. Specifically, this study proposes that students' participation in the project positively affects their perceptions of the acquisition of cross-curricular competencies, subjective learning, satisfaction with the course, and their academic performance. In addition, the acquisition of cross-curricular competencies is proposed to positively affect subjective learning, satisfaction with the course and academic performance (see Fig. 1). We contribute to the literature in active learning by fostering the students' creation of their own knowledge. From an experiential learning approach, the activity is intended to especially increase the students' acquisition of cross-curricular competencies (as hypothesized below). By engaging students in a context personally relevant to them, the activity is intended to improve their general skills and to apply these skills in a new situation from a learning point of view (Hodge, Proudford, & Holt, 2014).

According to Choi and Rhee (2014), active learning leads to student engagement and has positive effects on general student competency expansion. In this sense, Vaatstra and De Vries (2007) showed that students working in *activating*

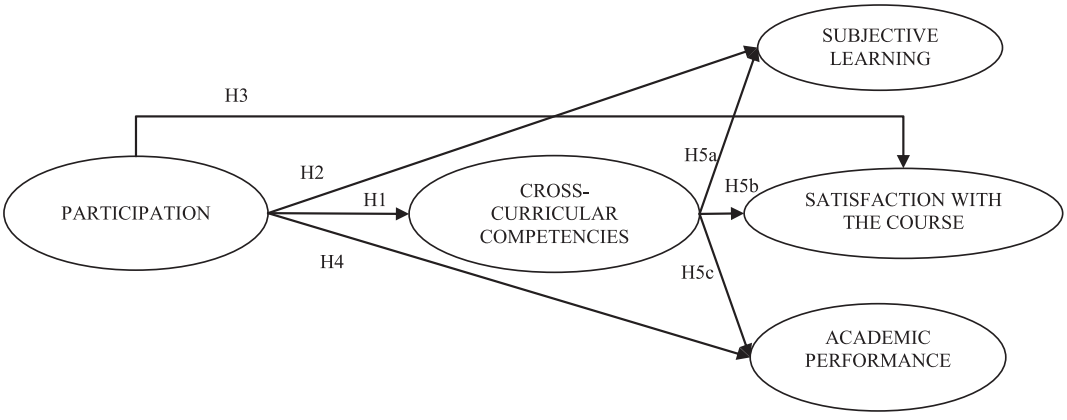


Fig. 1. Proposed model and hypotheses.

learning environments (project-oriented and problem-based environments) reported a higher acquisition of competencies such as cross-disciplinary thinking, planning, coordinating and organising, working in a group or reflective thinking, than those in *conventional learning environments*. Following an experiential learning approach, Ramburuth and Daniel (2011) argued that debates and case-based activities foster international business students' teamwork and communication skills.

Thus, the experience of creating a video may help students to develop competencies that transcend any particular field. Fralinger and Owens (2009) found that use of YouTube favours the acquisition of key cross-curricular competencies such as technological skills or workgroup competencies. Creating a video may involve further training and gaining experience in the use of software programs for editing videos. Moreover, participation in the activity may also improve the acquisition of social skills in presenting information in public and visually capturing the attention of anyone watching the video. Finally, the idea-generation phase, the development of the online video and its relationship to the contents of the course may also foster the students' creativity and analytical skills (e.g. Alpay & Gulati, 2010; Pérez-Mateo et al., 2011). As Liu (2003) noted, the creation of multimedia content could enhance creativity in order to make the video more attractive and entertaining to the audience, and improve learners' cognitive skills. Therefore:

Hypothesis 1. *Participation in the project of creating a video for the YouTube channel, compared to non-participation, will positively affect the students' perceived acquisition of cross-curricular competencies.*

Participation in the project may also imply a greater attention to the theoretical and practical aspects encompassed in the course, since it is necessary that the videos reflect the course's contents. As a result, we expect students to perceive that they acquire a higher level of theoretical knowledge related to the specific content of the course (e.g. Alon & Herath, 2014; Pereira et al., 2014), as reflected by the specific competencies. We therefore propose:

Hypothesis 2. *Participation in the project of creating a video for the YouTube channel, compared to non-participation, will positively affect the students' perception of subjective learning.*

Participation in the project also represents a challenge for students, given the many skills they have to master to create the videos. If they succeed, they should perceive and value their ability to complete this relatively complex process. Creating audio-visual content that will be uploaded to a social network could generate satisfaction among the participants. Alon and Herath (2014) found that the students' perceptions of the experience of developing a YouTube video were positive. They observed that students' satisfaction with the course was favoured due to the use of social media in their classroom. In addition, since satisfaction is formed from the confirmation of expectations (e.g. Oliver, 1980), satisfaction with the course may increase as a consequence of students perceiving the project as attractive and novel compared to the rest of the academic plan. Thus:

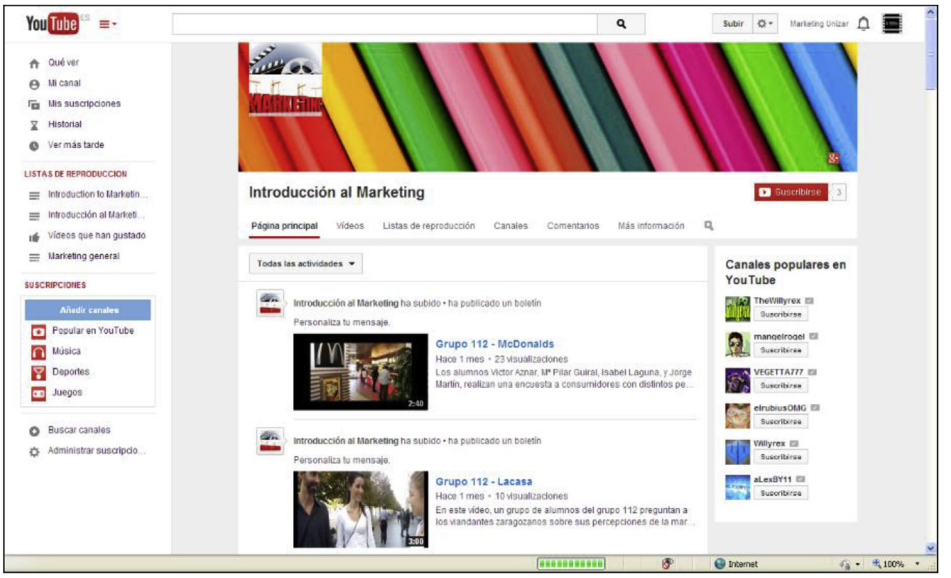
Hypothesis 3. *Participation in the project of creating a video for the YouTube channel, compared to non-participation, will positively affect the students' satisfaction with the course.*

Creating a video for YouTube involves a level of effort in both the preparation and understanding of the knowledge that will be expressed in the audio-visual content. Consequently, participation can improve learning related to the content addressed in the video, resulting in a better qualification in any assessment activity of the course (e.g. final test). Previous studies found that students using social networks such as Twitter for academic purposes achieve higher marks compared to non-users (Belanche, Guinalíu, & Flavián, 2014; Junco et al., 2011). Therefore, we propose:

Hypothesis 4. *Participation in the project of creating a video for the YouTube channel, compared to non-participation, will positively affect the students' academic performance.*

As previously stated, the acquisition of cross-curricular competencies is critical for students to obtain a complete preparation throughout their academic life. Thus, acquiring cross-curricular competencies (e.g. social skills, use of ICTs, general academic skills) may facilitate and promote the students' learning within each specific course. In addition, this commitment to enhance general skills can be perceived by the students as a profitable target. Students adopt a more active role in the classroom and acquire a greater variety of valuable skills for the future of their career, which makes them feel great satisfaction (Alon & Herath, 2014; De Juan & González, 2013). Moreover, cross-curricular competencies are becoming highly valued and demanded by employers (e.g. Azevedo et al., 2012; Parvu et al., 2014). If the students perceive the acquisition of cross-curricular competencies, they may feel more satisfied because they will be equipped with relevant skills in order to obtain and maintain employment. Finally, cross-curricular competencies can be useful when students face their final test. Kay (2012) argued that students improve their academic results due to the general skills obtained through the use of online videos in the classroom. Considering the students' active role in the YouTube project, this relationship may also hold and even be reinforced. In summary, it is expected that the creation of a video for YouTube will have a positive impact on students, either directly or indirectly:

Hypothesis 5. *The acquisition of cross-curricular competencies will positively affect the students' (a) perceived subjective learning, (b) satisfaction with the course and (c) academic performance.*



Note: The channel was created in Spanish due to the students' nationality.

Fig. 2. YouTube channel of "Introduction to Marketing" course–front page.

4. Methodology

4.1. Research context

This research examines the impact of the integration of a 2.0 ICT (YouTube) in a university course (Introduction to Marketing) for the degree in business management and administration at a major university in Spain. The course is compulsory for first-year students. This context was selected for three reasons. First, the students' learning of the "Introduction to Marketing" course is primarily evaluated by means of continuous assessment. This evaluation system is based on the outcomes of several activities carried out during the semester, rather than on a global exam.[1] Thus, and following the recommendations of experiential learning literature (Alon & Herath, 2014), the development of the project was consistent with the assessment policy and was perceived as appropriate by both professors and students. Second, according to previous reports about Internet-use habits (e.g. ONTSI, 2011), young college students are active consumers, and sometimes creators, of YouTube content. Beyond bringing new technologies closer to higher education institutions, the project could match with current trends in students' online behaviour. Offering the opportunity to create a video *for YouTube* could be seen as more appealing for students than *just* creating a video. Finally, by means of creating and watching audio-visual content, students could not only learn the topics covered in the course, but also acquire additional competencies due to this innovative methodology (as proposed in the research model; see Fig. 1).

4.2. Development of the project

The project consisted of creating an open video channel on the online platform YouTube. The channel was created and managed by the professors of the course. The aim of this high degree of control was to ensure that the videos complied with minimum quality and moral requirements and that the image of the marketing department and the university was not damaged by inappropriate content. In addition, given that the videos were uploaded to the same channel, a certain degree of protection was needed. Although uploading the videos by the students themselves could be a beneficial task, the access to the channel management would have allowed them to perform further actions in the channel that could be harmful (e.g. deleting videos from peers), as noted by previous research (Rodriguez, 2011).

The principal assignment for the students who voluntarily participated in the project was to create a short video related to the theoretical concepts covered in the course. This activity was conducted in groups from three to five people. Once the video

[1] In fact, most of the students followed the continuous assessment system. Only a marginal percentage (less than 5%) chose not to participate because of external reasons (part-time jobs, inability to attend the sessions regularly).

Table 1
Measurement indicators of the constructs and factor loadings.

Variable and indicators	Factor loading	t-value
Cross-curricular competencies (CCC)		
CCC1 **The "Introduction to Marketing" course has been useful to … …** develop social abilities.	0.816	20.154
CCC2 … elaborate and present ideas in public and discuss them.	0.741	12.821
CCC3 … better understand basic information and communication tools.	0.793	20.957
CCC4 … expand my capacity to use information and communication technologies for professional purposes.	0.793	16.910
CCC5 … improve my capacity to summarise and synthesise ideas.	0.812	21.189
CCC6 … improve my creativity.	0.751	15.057
Subjective learning (SL)		
SL1 **The "Introduction to Marketing" course has been useful to …** … improve my knowledge about marketing in general.	0.947	76.328
SL2 … better understand the marketing techniques, strategies and decisions followed by real companies.	0.919	31.701
Satisfaction with the course (SAT)		
SAT1 I am satisfied with the teaching method applied in this course.	0.896	33.792
SAT2 I am satisfied with the knowledge I have acquired in this course.	0.911	43.997
SAT3 The experience I have had in this course has been satisfactory.	0.910	41.726

Note: These items were presented in Spanish due to the nationality of participants.

was created, the students sent it to the professors who supervised the content and then uploaded it to the channel. Fig. 2 is a caption of the front page of the channel. Since the videos were uploaded during the Christmas break, students had approximately one month to interact with the videos (e.g. view, share in other social networks, like, comment) before the end of the semester (2nd February 2014).

Before uploading the videos, a few of them were turned back to their creators as they needed to be partially amended (e.g. subtitles had to be added due to bad sound quality), and three videos were not finally uploaded. Although all the videos accomplished with the moral requirements, one did not accomplish with the legal requirements (it was recorded at a private place −inside a supermarket− and the students did not get the manager's written consent). Another video was not uploaded because of its low image quality, and one participant refused to make the video public.

With the aim of encouraging the students' participation, they were told that the video could be used to partially replace the content of the primary compulsory project of the course. In this major project, students had to develop a written report analysing the strategic orientations and several marketing-mix strategies (i.e. product, price, place and promotion) of a real company. The students had to form groups (the same groups as in the video project) and work autonomously during the entire semester. Thus, the groups could use the video to explain a theoretical concept of marketing and illustrate it with the real company they chose for the major project. If they chose this route, they did not need to explain the concept in the written report. This proposal was made in order for the students to perceive that creating the video did not entail extra work. As previously stated, the video activity was voluntary and no direct link to the final mark was assigned to the video; only the content of the compulsory written report (i.e. the strategic orientations and/or marketing-mix strategies of a real company) was evaluated as an independent activity.

The course "Introduction to Marketing" is taught in eight classes with their corresponding professors. In order to avoid possible bias in development of the activity derived from the professors' background and pedagogic methods, an introductory session took place at the beginning of the semester in each classroom. All the professors involved in the project gave the same explanation (using the same slides and materials) of the activity to all students. In this session, the professors presented the objectives of the project, explained the procedure and requirements, and offered practical guidelines for execution.[2]

4.3. Evaluation of the project

At the end of the semester, a questionnaire was administered to all the students who followed the continuous assessment policy. The aim was to gather information about the students' perceptions of the acquisition of cross-curricular competencies, subjective learning and satisfaction with the course, whether or not they participated in the activity. In addition, students who did not participate in the project reported their reasons for non-participation. We obtained a total of 221 valid questionnaires, corresponding to 108 participants and 113 non-participants.

4.3.1. Measurement

Measurement scales for the questionnaire were obtained from different sources based on their theoretical content and usefulness for accomplishing the teaching goals of the project. In this way, six items measured cross-curricular competencies (see Table 1). The items were obtained from the official report of the degree in business management and administration developed by the university (2011, http://titulaciones.unizar.es/admin-direc-empresas/descripcion_detallada.html) and from questionnaires employed by European institutions that distinguish three categories of generic competencies: interpersonal,

[2] All the information regarding the design, goals, and procedure of the activity is summarised in the Appendix.

Table 2
Descriptive statistics, composite reliability, convergent and discriminant validity.

	Mean	Std. Dev.	ρ_c	AVE	1	2	3	4	5
1. Participation	0.49[a]	NA	NA	NA	NA				
2. Cross-curricular competencies	4.84	1.35	0.906	0.616	0.322	**0.784**			
3. Subjective learning	5.87	1.10	0.930	0.871	−0.030	0.490	**0.933**		
4. Satisfaction with the course	5.23	1.33	0.932	0.820	0.073	0.591	0.485	**0.906**	
5. Final mark[b]	5.60	0.81	NA	NA	0.353	0.218	0.086	0.083	NA

Notes: Diagonal elements (bold figures) are the square root of the AVE (the variance shared between the constructs and their measures). Off-diagonal elements are the correlations among variables. ρ_c: composite reliability. NA: Non-applicable.

[a] This mean represents the percentage of students that participated in the activity (49%) among those that answered the questionnaire at the end of the semester (108 out of 221).

[b] Final mark obtained by the student in the course is based on the official 0–10 scale of higher education in Spain (BOE, 2003), being 5 the mark needed to pass the course.

instrumental and systemic (Tuning General Brochure, 2007; Tuning General Competencies, 2014). According to these documents, there are six cross-curricular competencies that students should develop in an "Introduction to Marketing" course.

Similarly, the two items to measure subjective learning were obtained from the teaching guide of the course (http://titulaciones.unizar.es/asignaturas/27303/home14.html). Regarding satisfaction with the course, three items were adapted from a previous scale of student satisfaction in a higher education context (Casaló, Flavián, & Guinalíu, 2011). All the variables were measured using multi-item Likert scales (Table 1), and respondents had to indicate their level of agreement to the statements ranging from 1 = "strongly disagree" to 7 = "strongly agree". Information about the students' age and gender was also collected. Participation in the project was operationalised as a dummy variable (1 = participant, 0 = non-participant). Finally, the mark obtained by the student in the course (based on the official 0–10 scale of higher education in Spain[3]) was employed to obtain a measure of academic performance. It is important to note that the survey was administered one week before the final marks were published in order to avoid respondents' bias derived from their performance.

Therefore, we used data from three different sources (self-reported measures from students, codification of participation in the activity by the professors and final marks of students) and a combination of subjective (cross-curricular competencies, subjective learning and satisfaction) and objective (participation in the activity and academic performance) measures in order to avoid common method bias (CMB). CMB refers to variance that is attributable to the measurement method, rather than to the variables the measures represent, and may be a problem because it is one of the main sources of measurement error (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Collecting data from diverse sources and using different kinds of measures reduce this problem, thereby increasing the robustness of the study and the reliability of the results.

4.3.2. Analytical procedure and measurement validation

Data were analysed in two steps: the first consisted of validation of the measurement model; the second focused on the estimation of the proposed model and hypotheses testing. Following the increasing trend in research on innovation in higher education (e.g. Islam, 2013; Wu, Tennyson, & Hsia, 2010), and taking into account the exploratory nature of this study, partial least square (PLS) was chosen as the estimation procedure. This methodology is particularly useful because it makes no assumptions regarding the underlying distribution of the data. Moreover, it allows the analysis of small data sets (Chin & Newsted, 1999; Stan & Saporta, 2005) and is especially useful in situations with low theoretical information, or when the phenomenon under research is relatively new (Roldán & Sánchez-Franco, 2012), as is the case with our study. Specifically, the data analysis was carried out using SmartPLS software version 2.0 (Ringle & Wende, 2005).

First, a confirmatory factor analysis confirmed the initial factor structure with all item loadings above 0.70 on their respective construct, as the specialised literature suggests (Henseler, Ringle, & Sinkovics, 2009). As Table 1 shows, all factor loadings were between 0.74 and 0.95. Second, all multi-item constructs yielded composite reliabilities higher than 0.80 (see Table 2), thus confirming their internal consistency. In addition, the average variance extracted (AVE) was 0.60 or over for all constructs, ensuring the convergent validity of the scales (see Table 2). Furthermore, the square root of the AVE was greater than the shared variance among constructs (correlations), giving evidence of the discriminant validity of the measures (Fornell & Larcker, 1981). Table 2 shows the descriptive statistics of the variables considered in this research, their square root of the AVE values (when applicable) and their correlations.

With the aim of confirming the dimensional structure of the scale cross-curricular competencies, a rival model strategy was developed using structural equation modelling (Anderson & Gerbing, 1988; Hair, Anderson, Tathamn & Black, 1998). In this strategy, a second-order model measuring the construct with three dimensions (social, ICT and academic, according to the nature of each cross-curricular competence) was compared to a first-order model in which all

[3] This scale can be adapted to different grade systems. According to Spanish law (BOE, 2003), 9–10 stands for a very good (outstanding) performance, 7–8.9 indicates medium-high (notable) performance, 5–6.9 stands for medium (pass) performance, and less than 5 implies that the student did not pass the course (failed). Among the outstanding students, some of them (limited to less than 5% of total students in the course) may obtain a distinction in their mark.

the items formed only one factor. Although the model fit was acceptable in both cases, the first-order model was slightly better (first-order model: normed $\chi^2 = 3.938$, NNFI = 0.920, CFI = 0.952, RMSEA = 0.097; second order model: normed $\chi^2 = 4.028$, NNFI = 0.918, CFI = 0.956, RMSEA = 0.099). Thus, cross-curricular competencies were considered as a first-order construct in the analysis.

5. Results

5.1. Participation in the project and dissemination

A total of 125 students participated in the project (out of a total of 415 enrolled in the continuous assessment policy) and created a video that was uploaded to the YouTube channel.[4] This represents a participation rate on the video activity of 30.12% (125 out of 415). All these participants also developed the compulsory written report, except for the section that was replaced by the video. The remaining students enrolled in the continuous assessment system (almost 70%) only developed the written report. Taking into account that participation was voluntary and did not entail any extra mark for the students, this participation rate is considered adequate. Twenty-seven videos were created, with an average length of approximately 3 min (shortest video: 1 min 4 s; longest video: 5 min 27 s). Regarding the content of the videos, most of the groups (87%) focused on the real company they were analysing in the primary, compulsory project of the course. However, only 43% of the videos applied a theoretical marketing concept to the company (e.g. execution of TV commercials). The remaining videos focused on a general presentation of the firm or on interviews with potential customers in order to understand their opinions.

In terms of dissemination, the videos had received more than three thousand views at the time the research took place, with an average of more than 100 views per video, more than 2 h of display time, and most of them obtain a few likes or dislikes in YouTube. It is worth mentioning that six videos had received more than two hundred views with a display time of more than 4 h each and more than 8 likes each. The great amount of views indicates that, apart from students viewing their own creations, many other people have viewed this student-generated content, probably as a result of the initial dissemination made by the students themselves (e.g. sharing the videos in their Twitter, Facebook or WhatsApp profiles). As an example, a salient video obtained 187 likes, 16 comments (all of them positive) and 14 additional shares in Facebook. However, the analysis of the diffusion of the videos on social media is beyond the scope of this research. It is difficult to carry out a proper follow-up of all the shares made in the different social networking sites (students can just copy a link to the video in other social networks without clicking in the share button of YouTube, and viewers' retweets or likes in Facebook can also contribute to spread the video).

5.1.1. Self-selection bias

Before analysing the data to test the hypotheses, we needed to control for a possible self-selection bias. Although the business college students in this university may represent a homogeneous population in terms of gender, age, or educational and cultural background, it was important to measure these variables to examine how similar or dissimilar the participants and non-participants in the project are. These differences may affect the dependent variables and confound the results.

First, if participation was voluntary, it was possible that those students participating in the activity were dedicated learners who were highly motivated to obtain a good performance, compared to non-participant students. In this way, the questionnaire also measured the students' motivation for the "Introduction to Marketing" course. Previously validated scales were adapted to measure motivation (Gardner, Masgoret, Tennant, & Mihic, 2004; Tüzün, Yılmaz-Soylu, Karakuş, İnal, & Kızılkaya, 2009). Specifically, the students indicated, on a seven-point Likert basis, the extent to which they agreed with the following items: "I have been motivated to work hard on this course", "I keep up to date with this course by working on it consistently" and "I have been motivated to expend considerable effort on this course" (Cronbach's $\alpha = 0.908$). The results of a *t*-test for independent samples revealed that the motivation of participants ($M_{\text{Participants}} = 5.02$, $SD = 1.18$) was not significantly different from the motivation of non-participants ($M_{\text{Non-participants}} = 4.85$, $SD = 1.33$; $t_{(218)} = 1.00$, $p = 0.319$).

Second, it could be the case that participants and non-participants differed in terms of their demographic characteristics, leading to another source of self-selection bias. Following the procedure suggested by Yanovitzky, Zanutto, and Hornik (2005), we examined the association between the students' demographic profile (gender and age) and their participation in the activity. In this way, the percentage of males in the non-participant group (59.3%) was slightly higher than in the participant group (46.3%; $\chi^2_{(1)} = 3.492$, $p = 0.062$). In addition, both groups presented a similar profile in terms of age (participants = 19.11 years old on average, SD = 2.85; Non-participants = 19.33 years old on average, SD = 2.34; $t_{(219)} = 0.618$, $p = 0.537$). Given that we did not measure the students' year in university, which may also offer some bias in the analysis, age was dummy-coded to offer a proxy of whether the student was in the first year of university (18–19 years old) or if he or she was a *repeater* (according to the Spanish education system, this is older than 19). The

[4] However, of the 125 participants, only 108 completed the questionnaire at the end of the semester assessing their learning outcomes and satisfaction.

Table 3
Summary of results and outcomes of hypotheses testing.

Hypothesis		Estimated effect (β)	t	*p*-value	Hypotheses supported
H1	Participation → Cross-curricular competencies	0.322	3.762	<0.001	Supported
H2	Participation → Subjective learning	−0.210	2.706	0.007	Not supported [a]
H3	Participation → Satisfaction	−0.131	1.550	0.123	Not supported
H4	Participation → Academic performance	0.316	3.506	<0.001	Supported
H5a	Cross-curricular competencies → Subjective learning	0.558	6.620	<0.001	Supported
H5b	Cross-curricular competencies → Satisfaction	0.634	8.308	<0.001	Supported
H5c	Cross-curricular competencies → Academic performance	0.116	1.236	0.218	Not supported

Note: [a] Significant effect but contrary to expectations.

Table 4
Significance of indirect effects.

Indirect effect path	Total effect	Direct effect	Estimated indirect effect	Confidence interval (95%)
Participation → CCC → SL	−0.027	−0.210*	0.183	(0.073; 0.303)
Participation → CCC → SAT	0.079	−0.131	0.210	(0.081; 0.344)
Participation → CCC → AP	0.357*	0.316*	0.041	(−0.012; 0.101)

Notes: CCC = Cross-curricular competencies; SL = Subjective learning; SAT = Satisfaction with the course; AP = Academic performance. *p < 0.01.

proportion of repeaters was not significantly different in the non-participant group (28.3%) than in the participant group (19.4%; $\chi^2_{(1)} = 2.385$, $p = 0.122$).

5.2. Hypotheses testing: analysis of the impact of participation in the project

5.2.1. Direct effects of participation

Once the measures were validated, the hypotheses were tested using PLS as the estimation procedure. The recommended bootstrap of 500 iterations (Chin, 1998) was followed. A summary of results and hypotheses outcomes can be found in Table 3.

The results showed that participation in the YouTube channel project had a positive and significant effect on both cross-curricular competencies and academic performance. Thus, Hypotheses 1 and 4 were confirmed, respectively. However, and contrary to expectations, the effect of participation on subjective learning was significantly negative. Since this effect is negative instead of positive, Hypothesis 2 was not supported. Similarly, Hypothesis 3 was not supported, as the effect of participation on satisfaction with the course was non-significant.

5.2.2. Indirect effects of participation: the role of cross-curricular competencies

Turning to the effects of cross-curricular competencies on the other endogenous variables of the model, positive and significant effects of these competencies were found on both subjective learning and satisfaction with the course. These results supported Hypotheses 5a and 5b. However, the perceptions about the acquisition of cross-curricular competencies did not significantly affect the final mark, so Hypothesis 5c was not supported. Altogether, these results show that the participants in the project obtained a higher final mark and perceived a higher acquisition of cross-curricular competencies compared to non-participants. However, their self-reported subjective learning was lower than those who did not participate, and their satisfaction levels were similar. In these cases, participating in the activity could exert a positive indirect impact on the subjective learning and satisfaction with the course through cross-curricular competencies.

To analyse these indirect effects, the method of confidence intervals was employed (e.g. Chin, 2010; Preacher & Hayes, 2004; Williams & MacKinnon, 2008). Through a bootstrap analysis which uses a large number of subsamples with replacement (5000 in this case), this method calculates a confidence interval to examine the indirect effect of an independent variable (participation in the project) on a dependent variable (satisfaction, subjective learning and academic performance) through a mediating variable (cross-curricular competencies). The procedure is as follows: first, the path coefficients included in the mediating relationship obtained from the bootstrap estimation are multiplied; second, the 95% confidence interval is calculated by eliminating extreme cases through the percentile formula (Williams & MacKinnon, 2008). The indirect effect is significantly different from zero if the 95% confidence interval does not include the zero value.

The results of the estimation of the indirect effects and their significance appear in Table 4. Participation exerted a positive and significant indirect effect on both satisfaction with the course and subjective learning through cross-curricular competencies, which makes up for the negative direct effect of participation on these variables. In sum, the total effect of participation on both satisfaction and subjective learning was non-significant. However, the indirect effect of participation on academic performance was non-significant (zero was included in the 95% confidence interval). In this case, participation already had a direct and significant effect on this variable, making the total effect positive and significant (Table 4).

Table 5
Results of post-hoc analysis of cross-curricular competencies.

Proposed relationships	Estimated effect (β)	t	*p*-value	Significant influence
Participation → Social competencies	0.261	2.826	0.005	Supported
Participation → ICT competencies	0.346	3.929	<0.001	Supported
Participation → Academic competencies	0.252	2.814	0.005	Supported
Social competencies → Subjective learning	0.087	0.501	0.617	Not supported
Social competencies → Satisfaction	0.143	0.826	0.410	Not supported
Social competencies → Academic performance	0.075	0.522	0.602	Not supported
ICT competencies → Subjective learning	0.206	1.260	0.209	Not supported
ICT competencies → Satisfaction	0.224	1.307	0.193	Not supported
ICT competencies → Academic performance	0.020	0.137	0.891	Not supported
Academic competencies → Subjective learning	0.336	2.292	0.023	Supported
Academic competencies → Satisfaction	0.345	2.940	0.004	Supported
Academic competencies → Academic performance	0.032	0.268	0.789	Not supported

5.2.3. Predictive relevance of the model

Finally, it is important to note that the proposed model can partially explain its endogenous variables: cross-curricular competencies (R^2 = 0.104), subjective learning (R^2 = 0.280), satisfaction (R^2 = 0.365) and academic performance (R^2 = 0.137). This fact is remarkable, taking into account that multiple factors may affect these outcomes (e.g. hours of study, attendance at classes, student involvement, etc.).

In order to examine the predictive power of the model in more detail, we first evaluated the effect size (f^2) following Cohen's (1988) formula: $f^2 = (R^2 \text{ included} - R^2 \text{ excluded})/(1 - R^2 \text{ included})$. The f^2 indicator represents the variation of explained variance as a consequence of the inclusion of an additional variable, considering effect sizes of 0.1 as small and 0.5 as large (Pavlou & Fygenson, 2006). For subjective learning, the model with only cross-curricular competencies reached a higher effect size (f^2 = 0.388), compared to the model with only students' participation (f^2 = 0.049). Similar results were found for satisfaction (cross curricular competencies: f^2 = 0.562; participation: f^2 = 0.017). However, for academic performance, the effect size of participation (f^2 = 0.104) was higher than that of cross-curricular competencies (f^2 = 0.014).

Second, the Stone-Geisser Q^2 (Geisser, 1974; Stone, 1974) was examined as an additional assessment of the capability of the model to predict the endogenous latent variables using the blindfolding technique (Tenenhaus, Vinzi, Chatelin, & Lauro, 2005). Specifically, the Q^2 indicator reached values well above zero (subjective learning: Q^2 = 0.234; satisfaction: Q^2 = 0.299; academic performance: Q^2 = 0.137), meaning that the observed values were well reconstructed as a sign of the models' predictive relevance (Henseler et al., 2009). In the same way as the f^2 tests, the relative impact of the inclusion of variables on the predictive relevance can be assessed by means of the q^2 indicator: $q^2 = (Q^2 \text{ included} - Q^2 \text{ excluded})/(1 - Q^2 \text{ included})$, making the relative impact low for values around 0.02 and medium for values around 0.15 (Henseler et al., 2009). The model including only cross-curricular competencies was more relevant in terms of predictive capability for subjective learning and satisfaction (subjective learning: q^2 = 0.304; satisfaction: q^2 = 0.421; academic performance: q^2 = 0.014), and the model including only participation was better for academic performance (subjective learning: q^2 = 0.027; satisfaction: q^2 = 0.013; academic performance: q^2 = 0.103). In sum, while cross-curricular competencies were more appropriate to predict subjective learning and satisfaction, participation in the project was more predictive of academic performance.

5.3. Post-hoc analysis

5.3.1. Further analysis of cross-curricular competencies

With the aim of obtaining a better understanding of the previous findings, the relationships between cross-curricular competencies and the rest of the variables in the proposed model were analysed. Taking into account that these competencies refer to different learning aspects, it may be useful to examine their specific meaning to obtain more detailed implications for innovation in higher education. Looking at the items that form cross-curricular competencies (Table 1), statements one and two refer to social competencies, statements three and four refer to ICT competencies, and statements five and six refer to academic competencies. Therefore, an exploratory post-hoc analysis was carried out to evaluate the relationships between these three constructs of cross-curricular competencies (social, ICT, academic) and the rest of the variables. Before examining the causal model, the composite reliability and AVE values of the three new constructs were proven to be above the recommended cut-off points. The new constructs differed from the other variables in the model, verifying discriminant validity (Fornell & Larcker, 1981).

Results from the post-hoc analysis can be observed in Table 5. Participation in the project had a positive and significant effect on social competencies, ICT competencies and academic competencies. However, social competencies and ICT competencies did not have significant effects on subjective learning, satisfaction with the course and academic performance (Table 5). However, the acquisition of academic competencies had a positive and significant influence on subjective learning and satisfaction with the course, while the effect on academic performance was not significant. Therefore, the post-hoc analysis showed that participation was beneficial for the acquisition of different types of cross-curricular competencies, although these competencies did not affect the final mark obtained in the course. Furthermore, while social and ICT

Table 6
Reasons for non-participation in the activity.

Reason	Mean	Std. Dev.
I would have to invest a lot of time to perform the activity.	4.99	1.44
The activity does not have a direct influence on the final mark of the course.	3.48	1.59
I don't think I have the required knowledge to perform this activity.	3.46	1.58
I would have difficulties in accessing the technological resources needed to perform the activity.	2.84	1.64

Note: Respondents indicated their level of agreement to the statements ranging from 1 = "strongly disagree" to 7 = "strongly agree".

competencies did not influence subjective learning or satisfaction with the course, academic competencies helped to increase both subjective learning and students' satisfaction with the course.

5.3.2. Non-participation analysis

In the questionnaire about the evaluation of the course, the students who decided not to take part in the activity ($N = 113$) were asked about their reasons for non-participation. Specifically, they indicated their level of agreement to the statements included in Table 6. In this way, the belief that doing the activity would require a lot of time was found to be the main reason that explains non-participation. The lack of a direct reward in the final mark and the perceived lack of knowledge to carry out the activity were also indicated.

These results suggest that the non-participant students based their decision on the fact that the perceived benefits of the activity did not make up for the perceived costs. In fact, access to technological resources was not a relevant reason for non-participants. Finally, an open item was also included so that students could point out any additional reasons for non-participation. Few students filled out this open item, and in line with the previous results, the lack of time was the most cited cause. Other reasons were the lack of detailed information about the activity, or personal motives such as "I felt embarrassed" or "I produced the video but its quality was very low, so I decided not to present it".

6. General discussion

This research contributes to the literature on learner-generated content and YouTube's pedagogical opportunities by analysing the effect of students' video creation on their learning outcomes and satisfaction with the course. First, the analyses showed that the students participating in the project acquired higher levels of cross-curricular competencies and a better academic performance compared to non-participants. This finding is consistent with previous literature. For example, Pereira et al. (2014) found that compared to previous years, the average mark obtained by students was greater when the multimedia experience was developed. However, their study did not consider possible differences among students with different experiences. To increase reliability, our research examined students from the same course and demonstrated that participants (i.e. video creators) obtained a better mark than non-participants.

Second, participation in the activity did not have a direct effect on the satisfaction levels with the course, and contrary to expectations, it had a slight negative direct influence on subjective learning. This negative impact was compensated by a positive indirect effect of participation through cross-curricular competencies. Nonetheless, the total effect of participation on both satisfaction and subjective learning was non-significant. These results may be due to the fact that most of the videos uploaded to the platform were not strictly related to the explanation or application of the theoretical contents of the course (many videos just showed general presentations of firms that students were analysing for the major project of the course, or interviews with potential consumers in order to know their perceptions about these firms or their products). Therefore, it may be difficult for students to perceive an increase in their knowledge about the course contents as a consequence of developing the video. In this line, Pereira et al. (2014) also noted that students' opinion about the acquisition of subject-specific competencies due to the development of the online video was neutral. However, their conclusion was based on self-reported measures of the video creators only; this research extends their result by considering both participants and non-participants at the same time.

In addition, the population of the study consisted of first-year students and the course was conducted in the first semester. Thus, due to their lack of experience about educational methodologies at higher education institutions, the development of a video could have been perceived as a task requiring an additional effort, rather than as an incentive to improve their learning. We note that participation in the project was not compulsory, and was not directly evaluated as a part of the final mark. Students could have perceived a greater workload that would not be reflected in their final mark, thus further diminishing their satisfaction levels. In this sense, it could be interesting to make some changes to the course, such as devoting additional sessions exclusively to the explanation of the activity and monitoring students' work, as well as incorporating some incentives for participation (e.g. including it as a part of the final mark). All these questions will be considered for future academic years.

These results may also be explained from an experiential learning perspective. Experiential learning methods focus on real-life situations which engage students in contexts that are personally relevant to them and involve the application of ideas and skills to these situations (Hodge et al., 2014; Ramburuth & Daniel, 2011). Thus, the experience of creating the video made participants put their cross-curricular competencies into practice: they needed to work on their social skills, their ability to manage ICTs and their capacity to create and synthesise ideas during the activity. However, they did not actually experience a

real-life marketing situation (e.g. the participants who created a video about the execution of a TV commercial explained the steps to create the commercial, but they did not actually created it), thus participating in the activity did not directly influence their subjective learning.

Nevertheless, participation had a positive indirect effect on subjective learning and satisfaction with the course through cross-curricular competencies. According to the post-hoc analysis, the creation of the video served to increase the students' social, ICT and academic competencies. Consequently, video creating stimulates some kind of cross-curricular competencies that might be difficult to achieve by traditional teaching methods. This research highlights the importance of acquiring cross-curricular competencies that transcend a specific study programme, as they are becoming highly valued and demanded by employers (Parvu et al., 2014).

Results also indicated that academic competencies (i.e. the ability to summarise ideas and creativity) had a positive effect on subjective learning and satisfaction with the course. This finding suggests that students may have a practical perspective and base their learning perception and satisfaction on their acquisition of academic competencies, but not on social and ICT skills (although these competencies may be very relevant for their future labour). In addition, contributing to previous attempts to measure general competencies (e.g. Azevedo et al., 2012; Parvu et al., 2014; Solanes, Nuñez, & Rodríguez, 2008), we have identified three categories of cross-curricular competences (social, ICT and academic) based on the official indicators developed by our university. Nevertheless, given the high relevance of cross-curricular competencies for students and faculty, future research should focus on a further development of this concept from both a theoretical and empirical perspective.

7. Limitations and future research

This research has some limitations that also open future lines of research. First, taking into account that participation in the project was voluntary, we should not completely discard self-selection bias. We checked that the students' age and motivation for the course were similar between participants and non-participants. However, we observed a slightly higher proportion of male students who decided not to participate in the activity. Moreover, we used a proxy to measure the students' year in university. Future studies should analyse the effectiveness of the project in a more controlled environment, with a greater variety of students (including more experienced ones), in order to offer a higher generalisation of the results. Nevertheless, ethical issues may arise if some students (i.e. the experimental group) have the opportunity (or the obligation) to perform a specific activity whereas the others (i.e. the control group) do not. This project was carried out in a public university and therefore equal opportunities for every student must be guaranteed. Similarly, we note that both high and low levels of motivation might influence the desire to engage with ICTs. Highly motivated students can be more coordinated to carry out the activity, whereas students with a low motivation may perceive it as more fun, thus enhancing their motivation to learn. Although motivation was similar between participants and non-participants, it would be interesting to specifically compare high versus low motivated students and analyse which group would benefit more from this project.

Second, data were collected from eight different groups of students, with their corresponding eight professors (one professor for each group). Although the number of participants and non-participants were similar in each group and materials and assessments were the same for all groups (including the student's guide and the syllabus of the course), the professors' pedagogic methods may differ and affect students' learning outcomes and satisfaction. It would be useful to extend this research with alternative methodologies, or by proposing different activities in a range of groups in order to evaluate the specific effectiveness of YouTube-related activities.

Third, it should be noted that the students did not upload their videos to the YouTube channel. Although the students had some time to interact with the channel and the videos once they were uploaded, it would be interesting to give the students the possibility to freely interact with the platform to upload and disseminate their own creations. In this case, the activity should not be related to the official image of the university.

Finally, it would be interesting to deepen our understating about the reasons of non-participation in the project. Although there was one open item in the final questionnaire, respondents usually fill out surveys quickly without full consideration of other possibilities besides those provided. Therefore, other aspects such as the extra effort to coordinate the activity (compared to the written report) may influence the non-participation decision. Even if the same amount of time is devoted to each task, video creating may be viewed as a challenging activity requiring more in-person group meetings than a remote coordination that may suffice to perform a written report.

8. Conclusion

Our research evidences positive results derived from this educational project, showing that YouTube offers an effective platform for the development of learner-generated activities. Our literature review revealed that the convenience of YouTube as a learning platform for “digital natives” at higher education levels (Chan, 2010) may overcome the difficulties and lack of efficiency of previous learner-generated initiatives. Our results showed that participation helped to increase students' perceptions of the acquisition of cross-curricular competencies, and had a positive impact on their final mark. At the same time, participation had a positive indirect influence on both subjective learning and satisfaction with the course through the development of cross-curricular competencies.

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Appendix. Summary of the video activity: goals, guidelines and timeline

Goals	- General: • Improve the comprehension of the theoretical concepts of the course. • Turn the theory into practice, in a way that the students show a real application of the theoretical concepts. • Improve the learning process: greater retention of concepts. • Increase the students' involvement with the course. • Develop creativity, synthesis and teamwork skills. - Specific: • Increase the use of new technologies in higher education institutions. • Use social networks to disseminate information and knowledge. • Improve collaborative learning among students. • Increase the students' perceived usefulness of the knowledge acquired in the course. • Enhance the interactivity between students and professors • Promote the university on social networks due to the students' active participation in the creation of audio-visual content.
Guidelines	- The activity: • Students, in groups of three to five people, had to produce a video in which they explained some theoretical concepts of the course. • The explanation could be illustrated with a real company (e.g. commercial strategies). • Participation was voluntary. There was no direct link to the final mark. - Materials and techniques: • Recording the video: students' own digital video cameras, digital cameras, smartphones. • Recommended techniques: interviews with experts, oral presentations, documentary (combination of images, video clips and narration), dynamic PowerPoint presentations. • The choice of the content of the video and its execution was exclusively up to the students. - Requirements: All videos had to comply with the following requirements: • Recommended length: between three and 5 min. • Admissible format: DV, AVI, MOV, MPEG, WMV, or Flash Video. • Structure: the video had to start with a heading that clearly identified that it had been created by students of the degree of business management and administration at the university. In addition, the students had to identify themselves and the topic addressed in the video.
Timeline of activities	- Explanatory session: Beginning of the semester (during the first two weeks). - Video production and editing: Students had approximately three months to make the video. The professors developed some tutorials to learn about the use of common editing tools (Windows Movie Maker, YouTube video editor). The professors were at the students' disposal for any doubts or clarifications. - Deadline: the deadline to submit the video to the professors was the last school day before the Christmas break (22nd December 2013). - Video upload to the YouTube channel: During the Christmas break, the professors created the YouTube channel. They also checked that the content of the videos followed the moral standards and/or legal requirements (e.g. one video was recorded inside a store without the manager's consent, so it was not uploaded to the channel). After that, they uploaded the videos to the channel (http://www.youtube.com/channel/UCXj1vWQprt0bGUSnEweGjHA). - Interaction: After having uploaded the videos to the YouTube channel, students had plenty of time to interact by watching their videos on the platform, sharing them on other social networking sites (e.g. Facebook), liking or disliking them, or even posting comments. - Questionnaire: At the end of the semester, a questionnaire was administered to all the students who followed the continuous assessment policy, whether or not they participated or not in the activity.

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