EDULEARN 17

9TH INTERNATIONAL CONFERENCE ON EDUCATION AND NEW LEARNING TECHNOLOGIES

BARCELONA (SPAIN)
3RD - 5TH OF JULY, 2017

CONFERENCE PROCEEDINGS

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STUDENT-GENERATED VIDEOS AS A LEARNING TOOL AT UNIVERSITY STUDIES: SOME EXPERIENCES

R. Arruabarrena, A. Sánchez, I. Usandizaga, M. Toribio

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STUDENT-GENERATED VIDEOS AS A LEARNING TOOL AT UNIVERSITY STUDIES: SOME EXPERIENCES

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Abstract

In today's society, the video, which is used in different ways in Education, is a means of expression in continuous growth, especially by higher education students. In addition to being a medium of reinforcement or feedback, a support or a subject to study, the skill of expressing oneself through video is becoming a cross-curricular competence to acquire unavoidably in the field of the ICT (Information and Communication Technology) in these years.

Consequently, some years ago, we began to require the accomplishment of the creation of videos in the context of several subjects in the degrees of Computer Engineering at the Spanish Universities of UPV/EHU and La Rioja. In particular, those assignments were related to some topics covered in their respective syllabus or were used in flipped classrooms, and they were asked without providing any formal instruction to the students, in the belied of their own skills with technology and informal learning during the creation process. The satisfaction reported by those participants encouraged us to go further and to confirm the viability of the use of video in other centres and/or studies.

In this article we present the results obtained from a new experience of video usage in the context of university teaching in the area of Informatics at a French university along two academic courses with freshmen.

The key features of the experience are: (a) to propose small teams of students a micro-project to create, to edit and to publish a video on internet, without providing specific prior training of any kind; (b) to assess the generated videos by teachers and students based on a common framework of pre-established quality indicators and (c) to gather information through surveys of their previous competency levels, of their satisfaction with the process and made product, used tools and made learning.

The analysis performed on the gathered data has allowed us to state our proposal and to draw a set of conclusions about (i) the competences of university students regarding to the generation, use and management of the video as a communication tool, (ii) the conditions in which it is feasible to incorporate the video as a teaching resource in computer engineering studies in any course, and (iii) some learned lessons with regard to organize educational experiences based on this type of video project. Therefore, either by the previous levels of competence or by the informal learning during the experience, we have also found that (iv) students are able to develop further learning and relevant skills, such as, in our case, related to *Project management*.

These findings may be of interest or useful for any university teacher interested in incorporating video into their subjects, as the proposed experience has been proved to be extensible to other centres and studies.

Keywords: student-generated videos, cross-curricular competences, informal learning, experiential learning, learning from doing.

1 INTRODUCTION

In today's society, the video, which is used in different ways in Education, is a means of expression in continuous growth, especially by higher education students. In addition to being a medium of reinforcement or feedback, a support or a subject to study, the skill of expressing oneself through video is becoming a cross-curricular competence to acquire unavoidably in the field of the ICT (Information and Communication Technology) in these years.

For this reason, with different aims and/or application areas, but always within the framework of ruled university studies, we have proposed to university students the task of conceiving, creating and publishing videos on internet during the last years, and without providing them any formal instruction.

We have only limited ourselves to requesting them the accomplishment of the above mentioned tasks in ad-hoc teams, to later making them view and assess the videos produced by their colleagues, all this accompanied by surveys to gather information on previous competency levels, on satisfaction with what has been done and on tools used.

The paper is organised as follows. Firstly the research context together with its motivation is explained. Then how the experience has been carried out is shown, followed by its corresponding evaluations and assessments at different stages. The fifth and sixth sections are devoted to the results and conclusions.

2 BACKGROUND AND MOTIVATION

Our experience at the Universities of La Rioja (UR) and of the Basque Country (UPV/EHU), with a video project in a compulsory subject of third year of a degree in Computer Engineering has been successful throughout several courses [1]. Therefore, we considered it suitable to apply it in a cross-curricular subject of the first year in the University Degree in Technology (DUT) at the University Institute of Technology (IUT) of the University of Pau and Pays de l'Adour (UPPA), France, within a framework of cross-border collaboration. The hypothesis was that the good results obtained in the first framework would also be maintained in the second location and, therefore, they could be generalizable.

The DUT Informatics degree is a two-year degree, with 1,800 class hours, tutored projects in both academic years and an eight-week company practice. As an initial part of the first-year tutored project, students are required to make videos of different subjects, not specific to computers, and motivational for them. Thus, in 2015-2016 the theme of the Video Project was to disseminate their centre and studies, and in the following year, being youth-oriented it has been to instruct in cybersecurity,

As background, we briefly illustrate how video usage is affecting informal learning, as well as its use in university teaching. We finish the section with a short introduction about experiential learning.

2.1 Informal learning through video practice

Today's teenagers often use video, both for fun and for information. According to the *Observatoire des réseaux sociaux* (data from 2013), in France 65% of young people aged between 12 to 15 develop video-making practices and 82% of youngsters between the ages of 16 and 18 have made and published some video for a social network. Young people acquire digital skills out of class and video has become a regular media consumption tool for them, and consequently, influencing in positive and negative ways in their studies [2]. Teaching the Youtube generation presents new possibilities by permitting to work with media that they already dominate [3].

Informal learning mostly takes place outside the institutional framework and, in this case, limited chiefly to publish videos on social networks, hence its "informal" nature, as opposed to the formal learning that comes directly from education or professional training [4].

Throughout their lives, students capitalize on explicit knowledge, drawn from their formal learning and from different formations they have followed, along with their implicit knowledge, acquired informally through personal experiences or practices. Informal learning could be used to strengthen other teaching methods and also to increase the effectiveness of formal learning [5]. For this reason, in the DUT, and primarily in the first year, there is a special interest in capitalizing on such informal knowledge about production, editing and publication of videos, to transfer it afterwards to a teaching-learning situation and, in our case, to acquire knowledge in another area, the area of project management.

According to [4], this experience allows motivating students through an objective of their interest (the realization of a video without formal teaching) so that learning takes shape and is fixed in their mind, almost without realizing it. A feature of informal learning that occurs unintentionally and often unconsciously [6]. In addition, it allows learning from what it has been doing and provides a common reference on which to base further learning. In [2] it is confirmed by a study of 2,712 students aged between 10 and 17 years on the effects of pedagogies using ICT and video in class. From this survey, it follows that students are more motivated and more reactive towards learning using this medium (video).

2.2 Video usage in university teaching

The use of videos in education has evolved over time. A simple use is the recording or substitution of the teacher's class with the advantage that the students can attend the class when and where they want and/or see again what they do not understand [7]. They have also been incorporated as a source of external information, that is, they are used for the same purpose but are not made by teachers themselves. The ability or facility to produce videos both by teachers and students in recent years has allowed them to be incorporated into the classroom via the flipped classroom methodology [8]. Before the class session, students see some videos that cause a debate or are a starting point to work in the classroom [9, 10, 11]. Other examples can be found such as case study, self-reflection or video-based discussion groups [12].

In parallel with the technological advances that make possible the production of good videos and their visualization at any time and any place, a more active participation of students in the learning process has been fostered. In this way students have begun to be producers of videos also in the academic context, though initially more in the field of humanities and education, it happens equally in Engineering [13]. The creation of videos according to Bloom's taxonomy adapted to the digital age [14] requires mobilizing higher-order, high-level cognitive thinking skills, which include the actions of understanding, planning, filming, direction, creation, combination and cooperation. Since university students, regardless of discipline, can be considered digital natives [15], they should not have difficulties in producing videos. Video production allows students to express themselves in a way that makes them feel more comfortable, increasing their motivation and stimulating more imaginative creations [3]. However, it requires practice and experience that not everyone has, since using this technology to socialize with friends is not the same as learning, developing critical thinking or communicative skills.

We can find different examples to include the production of videos [16] as a demo mode to replace the presentation of a computer project or a guided tour of a computer system or a presentation of their project results in education [17] or a video report production of chemical laboratory practices [18].

In the same time, we can already find studies on students' opinions on their experience as producers of videos in university contexts. Thus, if they can choose between performing a written work or a video, those who choose video option value their experience better in some cases [19, 20]; but, equally, we can find others who still prefer written work [21, 22] more due to the difference of time and effort involved or because of how it is taken into account in the evaluation, than due to technical difficulties.

There are also examples of contexts in where the videos produced by students are valued by their peers, and in the peer reviewed case, they strive harder and produce higher quality videos [2, 13, 18, 20] by social pressure from the scrutiny of their peers.

2.3 Experiential learning: learning from doing

Experiential learning builds on the foundation that learning is a process which focuses on experimentation, active engagement and reflection. It is a methodology that uses the subjective experience as motor learning [23]. It is a simple act of learning by doing, but it is the first step in a process that allows one to be aware of one's own direct and immediate experience, to observe and to reflect on the experience, to think and to conceptualize. That is to say, besides learning by doing, learning happens from what you have been doing.

In our approach (see Fig. 1) it is important to place students in a common experience, the Video Project. Our goal is not to learn to make videos, but to face a minimally complex working task as a team, with limited deadlines and resources, and achieving an acceptable final product based on their previous level of technical skills. In this way, we expose them, on a reduced scale, to problems of professional practice by providing them with a common field of experience to later reflect on it, once they are aware of the problems and difficulties of working with others to achieve a single result. Actually, we are not so interested in what they do and get, but in how they do it: we seek them to learn about project management, not about video editing.

In this way, and by means of the realization of a small project that is motivating for students, we introduce the need of putting into practice cross skills that they either lack of or have not developed sufficiently, facing some of the typical problems of their profession on a small scale and laying the foundations of that common experience which will serve as a sandbox for the reflection and understanding on formal subjects that will be learned in the following semesters. As added value,

tackling these problems more or less successfully helps to better understand the need for good practices and higher competency levels in order to achieve the desired knowledge and skills.

3 DEVELOPMENT OF OUR EXPERIENCE

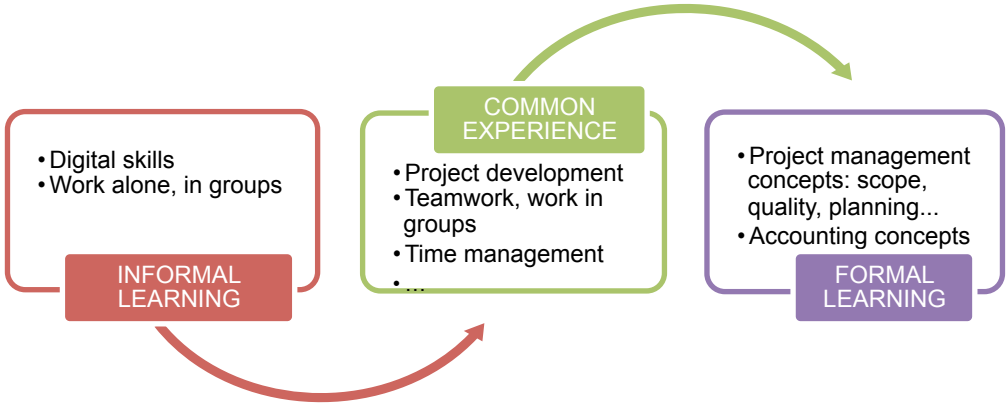

Figure 1: The Video Project.

The new experience has been an adaptation of a previous interuniversity collaboration based on the creation of videos by students as an introductory teaching tool to teamwork in a university field of professional training in computer engineering. The original experience [1] was applied in a *Project management* subject in the context of a computer engineering degree which combined three well-known methods: project-based learning, spiral learning and peer assessment.

Thus, we have tailored our original experience to apply it at the IUT, so first-year students of the DUT Informatics degree are exposed early to the same concepts, techniques and processes of the area; and with an added value of serving as a tool for alignment and coordination of work in a project that groups of students must carry out over the two years of training as a backbone of it.

While the previous experience was developed in a specific subject, its achievement in the IUT concerns different subjects and consequently it affects several instructors of a department. The IUT develops a Tutored Project throughout the year which serves as a support for the knowledge and skills to develop during the training. It should not be confused with a specific assignment in a subject; it is an area of interdisciplinary and cross-curricular experimentation.

As an activity within the mentioned tutored project and developing the idea of cross-border cooperation, the Video Project has been incorporated into the practices of the computer department. In this project, students are grouped at the beginning of the course in groups of four, and they are asked to create and publish a video on internet, with specific characteristics:

- Objective / theme: in the first year of the experience, the theme of the project was to publicize their own Institute, the IUT, to future students; while the theme of the following year has been to instruct in cybersecurity to young people between 12 and 16 years.
- Technical specification: The video must be uploaded on a free-access platform with a maximum duration of two minutes, published under a Creative Commons license that must appear in the video itself, along with the necessary references in case of use of third-party materials. Equally, the recognizable participants must have given their approval and must appear in the credits, along with the reference to the IUT and its logo.
- Dedication and deadlines: The project is limited to two weeks at most (12-14 days), with an individual dedication of each participant between two and five hours, based on previous knowledge in editing and publication of video, teamwork ability and the quality level planned for the video.

Among the previous arguments in favor of incorporating the Video Project are: (1) to offer an activity that facilitates the involvement of students considering that they did not need particular skills except those regularly used in their daily lives: producing videos with mobile phones and publishing them on the Internet, working as a group and (2) incorporating a reverse pedagogy activity through informal learning, based on the approximation of learning from doing, and shared among all members of the

department for their exploitation in their respective subjects, based on the common experience of all the students having faced the same project.

That is to say, the Video Project serves to achieve a common experience about different concepts and skills by applying informal learning, and which will later allow the formal learning required in subsequent subjects as shown in Fig 1. It is important the early exposure of students of very heterogeneous backgrounds who do not know each other, with different work habits and abilities, through informal learning. This concrete experience facilitates the later abstract conceptualization that is needed in the context of formal learning of later subjects.

After the delivery of the videos produced by the students, a first reflection is made in a debriefing session, together with an assessment of the work done and satisfaction with the result, focusing on some basic concepts of project management. In subsequent semester assignments, teachers incorporate the Video Project into their classes. It is used as a reference to work on concepts such as: *specification*, *internal and external quality*, *customer*, *customer satisfaction*, *point of view*, *obligations of the parts*, *property rights*, *production and service contract*, *role and actor*, *resource management*, *group and skills*, *costs*, *budget*, *estimate*, *term*, *planning*. The Video Project previously done serves as a common experience, facilitating the participation of students. Students may value the implicit or explicit consideration of the use of these concepts in their own experience. The properties of each concept are then manipulated more easily and dynamically in the classroom thanks to the existence of a shared experience on the same object: the Video Project.

4 EVALUATION AND ASSESSMENT

It is noteworthy to mention that all groups completed the Video Project in time and without major problems. In the 2016-2017 academic year, more surveys have been administrated. Thus, concerning the estimation of devoted time to the project, 43.6% of students spent between 2 and 4 hours of individual work; while 46.6% of groups spent between 10 and 14 hours of group work.

Once the project was implemented, it was necessary to proceed with another important stage, which was the evaluations of deliverables and implementation processes, both by teachers and students.

4.1 Video evaluation criteria

The videos were evaluated according to three families of criteria: basic quality, advanced quality and overall evaluation.

- Basic quality: criteria explicitly required in the statement and verifiable without ambiguity. For example, the video is accessible on the web, the required message is addressed, duration is between 1-2 minutes, factual elements are included and participants are listed. The whole family was graded on a scale 0 to 10.
- Advanced quality: more subjective criteria such as quality of image, sound quality, clarity of the message, and opportunity/originality of the scene/setting. This family was graded on a scale 0 to 5.
- Overall evaluation: overall appraisal of the video. It was graded by 5-point Likert scale, ranging from 1 (unsatisfactory) to 5 (excellent).

Therefore, satisfying the requirements of the statement strictly, the video could get 10 points in basic quality and at least one point more in the overall evaluation, since it was the minimum value in that part, which altogether ensured 11 points out of 20.

4.2 Evaluating videos by teachers and students

Once all groups delivered their videos in time, each one was evaluated by teachers from the IUT and from the UPV/EHU as well. Specifically, each teacher assessed between 6 to 7 videos. Later, in a plenary session with all the teachers involved, and via videoconference, each video was displayed and the subgroup of teachers who had assessed it showed their grades for discussion and they agreed on its final grade. While the process aimed to unify criteria and valuation, the gathered data showed the teachers' point of view.

The mean of the grades given by teachers was 16,05 (out of 20), which indicates the high quality of the generated videos, being only 2,11 the mean absolute deviation. Except in one case, all the videos obtained a final grade higher than 12. Fig. 2 gathers all the final grades agreed by teachers.

Taken into account those grades, and before reporting them to students, six videos were selected: two with high grades, two intermediate and two with low grades. Shortly, each student viewed and assessed them with the same criteria as those used by teachers: basic quality, advanced quality and overall evaluation. It is worth mentioning that displays and assessments of the six videos were done sequentially, without any possibility of turning back.

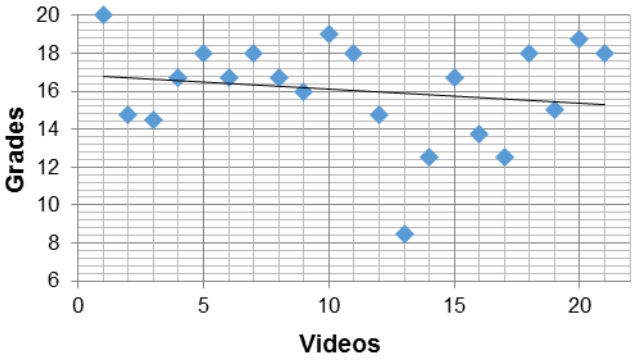

Figure 2: Final grades of videos set by teachers.

4.3 Feedback and assessment: Debriefing session through survey

Once more, before reporting these results, a session was held which was devoted to share and to give feedback on the experience of the Video Project. It was a plenary session with all the students and the teachers involved, not only with those from IUT but also those from the UPV/EHU. In that session, the goals of the project were presented, paying special attention to the reverse pedagogy, that is to say, having a shared experience on a problem of type: assignment, production and evaluation. Accordingly, the experience can be used to illustrate terminological, technical and methodological aspects in the area of project management in other subjects.

In the debriefing session students answered a battery of questions, explicitly grouped into four families: Product, Group of the project, Planning / Process (management) and Assessment.

The questions were negotiated between the involved teachers, so that they would be useful as complementary material in the future classes of other subjects. In general terms, the questions collect assessments on:

- Product: Satisfaction of those involved (producers, promoters, target audience and teachers).
- Group of the project: Satisfaction with members and their involvement in the group.
- Planning / Process: Satisfaction with development and dedication.
- Assessment: global satisfaction and learning.

5 RESULTS

Having confirmed the viability of the experience in the first year, in the second one we considered/proposed two surveys to obtain information from students about two different aspects of the experience: one survey on student satisfaction and perceived learning, and another one on previous experience in video editing and publishing, the tools and platforms used and the skills and competences acquired during the project. Some results of both surveys are summarized below, and complete data can be seen in Table 1 and Table 2.

This course, 84 students have participated in the production of 21 videos, 39 of them answered the first survey, though 3 of them failed to complete it successfully, and 38 responded to the second, that is to say, only 45.2%. For this reason, within the management of the collaboration project, a new priority improvement option has been identified which is to increase the number of granted responses, since a larger sample is required in order to support better the hypotheses.

5.1 Results on satisfaction and learning

As it can be seen in Table 1 (69.2%), the majority (69.2%) liked the approach of the project and they were pleased with the result (74.4%) as well as with the development of the project (79.5%), even if a high percentage (48.7%) declared that on another future occasion they would face the project in a different way. They are equally satisfied with the performance as a group (74.4%), and consequently, an even higher percentage (84.6%) would be willing to continue with the same group.

With respect to the learning gained from experience, 74.4% stated/declared that it allowed them to differentiate basic concepts from the area of project management: product, group and process. This percentage confirms our hypothesis of the potential of learning from what has been done.

Table 1. *Satisfaction and learning with the project (7,7% did not answer the questionnaire).*

	Yes %	No %
PRODUCT		
Are you satisfied with the product?	74,4	17,9
Do you think that the promoter will be satisfied with the product?	71,8	20,5
Do you think that the target audience will appreciate the video?	79,5	12,8
Does your video meet the all the requirements of the statement?	79,5	12,8
GROUP		
Are you satisfied with the performance of the group?	74,4	17,9
Are you satisfied with continuing in the same group?	84,6	7,7
Are you satisfied with your contribution to the group?	74,4	17,9
PLANNING/PROCESS		
In case you repeated the experience, would you proceed in the same way? Would your performance be the same?	43,6	48,7
Are you satisfied with the development of the project?	79,5	12,8
Are you satisfied with the ratio 'time devoted by the group' and 'generated product'?	76,9	15,4
Number of hours of individual work that you estimate you have devoted to the project: (0-2h: 12,82%) (2-4h: 43,59%) (4-6h: 15,38%) (6-8h: 15,38%) (8h<: 5,13%)		
Number of hours that you estimate your group has devoted to the project: (2-6h: 15,38%) (6-10h: 23,08%) (10-14h: 43,59%) (8h<: 10,25%)		
ASSESSMENT		
Did you like the project?	69,2	23,1
Due to the experience, including the debriefing session, do you distinguish now the concepts of Product, Group and Process?	74,4	17,9

5.2 Previous experience and learning in editing, recording and publication of videos

In the survey students were asked about previous experience in recording, editing and publishing video. Next some outcomes of interest are discussed. (To check questions and complete results see Table 2). Regarding previous experience, eleven students (28.9%) stated that they had previous practice in the three activities (recording, editing, publication), the same number of those who stated they had recorded and published before. Those who stated that they had edited and published in advance were fourteen (36.8%), while the majority corresponded narrowly to those who stated that they had edited and recorded in advance, a total of seventeen (44.7%).

Table 2. *Results in video skills.*

Previous personal practices						
	Yes	No	More than 3	Personal	Academic	Both
Recording	25 (65,8%)	13 (34,2%)	13 (52%)	21 (84%)	9 (36%)	5 (20%)
Editing	23 (60,5%)	15 (39,5%)	15 (62,2%)	18 (78,3 %)	10 (43,5%)	5 (21,7%)
Publishing	15 (39,5%)	23 (60,5%)	9(60%)	15 (100%)	3 (20%)	3 (20%)
Used tools						
Tools	Smartphone 17 (44,7%)	Computer 11 (28,9%)	GoPro 8 (21,1%)	Camera 7 (18,4%)	Others 4 (10,5%)	
Editing application	Sony Vegas 12 (31,6%)	Premier Pro 8 (21,1%)	Windows Movie Maker 6 (15,8%)		Final Cut 5 (13,2%)	
Web to publish	YouTube 36 (94,7%)					
Subsequent personal skills. Improvement in…						
Recording	YES 19 (50%)	NO 18 (47,4%)	Unanswered 1 (2,6%)			
Editing	YES 25 (65,8%)	NO 12 (31,6%)	Unanswered 1 (2,6%)			
Publishing	YES 19 (50%)	NO 18 (47,4%)	Unanswered 1 (2,6%)			

What has been most striking is the result obtained on recording videos: we expected a higher percentage, one closer to 100% in the recording of videos as they are digital natives. These are defined as individuals born after 1980, who were raised in an environment in which they were surrounded by technology and who possess technological skills different from those possessed by the members of the prior generation [15, 24], also called *Millennials*, *net generation* or *i-generation*. Some of their most outstanding features are that they have been nourished by technology, they are more sophisticated in the usage of the internet and mobile devices than their prior generation; They use complex technological products without difficulty; They are comfortable doing more than one thing at a time (multitasking); Do not use only text, tend to use graphics and media to communicate. Furthermore, there are also studies that say they are not as homogeneous as one tends to think [25]. According to this study [25], multimedia creation may not be among those technologies that can be assumed to first-year students. In our case, it is not a mere recording, since our video assignment needs a previous script and some planning. The debriefing session allowed us to understand that many students answered as if they had never recorded video because they had understood that they had been asked about the "formal" context of learning. In that case, most students had never done an activity like this in their previous curriculum, but they admitted that they had recorded videos in their personal area.

It has also been striking that before carrying out the Project Video there had been more students who had "edited and published" to "record and publish", although very few people responded. In any case, the less frequent practise done by the students had been publishing, and some that had not recorded, they had edited. Thus, of thirteen students who had not recorded, seven had edited.

Once the project was completed, the survey asked about tools and video publishing platforms used in it. In this case, in terms of tools and platforms, there were no surprises; smartphones and YouTube were the predominant ones.

Finally, students were asked about acquired personal competences within the project in terms of video recording, editing and publication, noting that video editing was the competence on which they perceived the greatest improvement after the project was carried out.

6 CONCLUSIONS

In this article we have presented the experience of using a project to create a video by students without providing them any formal instruction, based exclusively on their abilities, in the belief that they could cope with it, since being digital natives, they were already skilled in the usage of technologies and would be able to learn (informally) during the process. We already had a previous positive experience that we wanted to transfer it to a different academic environment (different country, educational system, training of studies, specificity of the subject, impact in others) and to check it with

different students (age, nationality, academic origin), in order to verify its feasibility and interest for almost any subject, studies and/or universities.

In addition to the levels of satisfaction observed in the different groups involved (students, teachers, persons in charge of the experience), we have also extracted some data that have allowed us to reflect on usage of video in teaching, characteristics of the performed learning, students' uses and habits and feasibility of the experience.

For example, we have seen that the video is a good tool to engage students in informal learning as a starting point for formal learning. Moreover, students possess sufficient skills or are able to easily acquire them to carry out the task. Both quality of the provided videos and satisfaction with their accomplishment support it. However, it is the fact that all first-year students who faced the experience succeeded in it, fulfilling in scope, time, dedication and quality required which leads us to conclude that this type of teaching experiences are fully viable.

To include the valuation/assessment to contrast what other colleagues have done results in informal learning incorporating a thoughtful element.

Additionally, to have this project completed enables its use as a reference in subjects as Project management, Accounting, financial, juridical and social environment or Information systems management, by exposing students to situations and problems inherent to these areas of knowledge and providing them with a common frame of reference on which teachers can help them to reflect in order to identify good practices, to assess the difficulty of certain types of problems or to identify common risks in different areas; in general, expose them to relevant knowledge and areas of application in their professional future.

We can conclude that it is a practice that, with due consideration, can be implemented by any university teacher who wishes to use the video in their teaching practice.

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