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Innovating at college classroom through dipro 2.0*

Verónica Marín Díaz**

**Doctor of Pedagogy, Main professor at Cordoba University, (Spain), member of research group e2i, vmarin@uco.es.

Julio Cabero Almenara***

***Doctor of Sciences of Education, Professor of Universidad de Sevilla , research group GID, cabero@us.es

Abstract

Involvement of Technologies of Information and Communication –TIC, in college education is an unquestionable reality. The following describes a formative methodological experience, related to teaching WebQuest at the classroom of Grade First of Primary Education, Faculty of Sciences of Education, at the University of Cordoba, performed through the Personal Learning Environment (PLE), created parting from the project Design, Production and Evaluation of a learning environment 2.0 (DIPRO 2.0), during the academic term 2011-2012. In preparing the proposal teaching innovation, an almost-experimental study was realized, by applying a test previously to place the methodological innovation into operation, in order to collect information on the students previous knowledge about the topics to be developed, and a postest was administered later, to see whether or not such knowledge had been favoured after developing the methodological action. The main result showed that skills on WebQuest tool was expanded and/or achieved in most of the students; this fact leads us to infer that teaching through the tele-formation platform is a useful resource to improve the learning process by college students of Primary Education Grade.

Key words: College student; Internet, Tele-formation platforms; social networks; university.

Research Project I+D+I by the Ministry of Economy and Competitivity, at its summons 2010, Ref. EDU2009-08893.

Introduction

College current teaching has achieved a new perspective since the last Century when the European Space of Higher Education –ESHE appeared. Development of new academic plans has supposed modification of perspectives and visions on college education, and more concretely, its classroom methodologies.

Internet-supported technological tools, have undergone the greatest progress in those new methods of designing teaching-learning processes. As Carrera and Paredes state: "Its incorporation into college curricular redesign provides teaching a renewing perspective, in addition to improve a learning process which facilitates acquisition and transmission of contents" (2009:262).

Tools 2.0 provided through Internet have acceleratedly grown, (Martin & Reche, 2012). Among them, it is worth to mention social networks, wikis, blogs, content producers, social markers, etc.; they are evaluated by some authors such as Brown (2012), taking into account their dynamism, interactivity, volatility or sociability, among other aspects, which make them eligible to be included into teaching practices, from different ways, thus leading to pass from a teaching model centered on the teacher to other models grouped in the student and in connectivity (Telephone Foundation, 2012). As Micioughlin and Lee claim:

> Web 2.0, and social software tools may be used to promote the student autonomy and enhance socialization level and interactivity, while allowing the user to control, pair to pair creation of knowledge and network-based research (2011:58).

Among them, tele-formation platforms have undergone a vertiginous change in their use intentions. Seen at first as a repository of learning objects mainly in PDF format, have turned into true virtual classrooms, where students interact, organize groups, and exchange information. Any way, we may not forget that there has been a strong trend to use them like on-campus classrooms, in this manner turning into traditional formation environments more than teaching innovating environments. As stated by Dabbagah and Kitsantas (2011), although at first tele-formation platforms were designed to provide a flexible framework for advanced learning, research on this matter (Maldonado, 2012), has demonstrated that their use has increased as tools for diffusion of materials rather than instruments which promote students participation and interaction; in conclusion students learning, which is causing that new proposals, such as Learning Personal Environments –LPE, are achieving a great importance in education spaces (Cabero, Barroso & Lorente, 2010; Cabero & Martin, 2011; Cabero, Martin and Infante, 2011; Castañeda & Adell, 2013), as instruments to eliminate LMS rigidity.

This interests is a direct consequence from Web conceptualization, where the students may interact as a part of a social network, and introduction of the next generation of mobile technology, which leads learning to happen at any place and at any time (Martin & Reche, 2012).

This new way of designing higher education, provides a learning environment, where the student turns into the central axle of the whole formative process, as stated, passing from a transmitting teaching to a new one flexible and open (Carrera & Paredes, 2009), and where the student acquires full understanding of his formation process. We agree with Garcha-Valcarcel and Tejedor (2011), that incorporation of TIC into classrooms promote the use of active methodologies, which in the case presented herein, will promote group and cooperative work by the students, which as a core aspect of learning, based on competences that ESHEs have led to college arena.

Innovating through Dipro 2.0 environment

Use of 2.0 tools in education have progressively acquired major importance, its use is turning student learning, at every level, into more interactive, significant, creative, dynamic, and effective (Castaño, Maiz, Palacio & Villaroel, 2009); Cabero & Marín, 2010; Marín & Cabero, 2010; Ahmadi, Keshavarzi & Foroutan, 2011; Chang, Chen & Hsu, 2011; Gómez, Roses & Farrias, 2011; Marín & Reche, 2012, Llorente, 2013). Such aspects bring the proposal we are analyzing herein, which is within a research project I+D+i conceived by the the Ministry of Economy and Competitivity, at its summons 2010, Ref. EDU2009-08893 (Cabero, Barroso Y Llorente, 2010). One of its objectives is to validate the telematics environment created, and the proposal of design of materials prepared (Cabero, 2012), in a formal context of teaching. For such purpose, the formative environment Dipro 2.0 was created, formed by a PLE (Cabero, Marin & Infante, 2011; Rodriguez, 2013), everything supported on Moodle as LMS, and

with various tools of web 2.0, coordinated through Oki-Bus (Infante, Gallego & Sanchez, 2013), and a LMS environment as Moodle (figure 1), while a repository of materials with a specific structure was available (Cabero, 2012).

Figure 1. Image of Dipro 2.0

Source: http://tecnologiaedu.us.es/portal/

The section of formation thematics, designed both, for teachers and students, was formed by 16 blocks, rotating around the society of information and knowledge, passing through Web 2.0, WebQuest, Hypermedia, Hypertexts, and digital videos, among other. In the case of Cordoba University, it was selected the unit or module related to WebQuest, because of being included in the teaching guide, of compulsory compliance by involved teachers.

WebQuest (WQ) use in education levels, lower than higher education, is habitual, numerous web sites, as well as blogs, are used at primary and secondary education centers. However, such use is new in higher education teaching. This type of tool has jumped to such higher spectrum when Internet changed to be name Web 2.0, and its great possibility for contents transmission was seen (Mentxaka, 2004).

Then main advantage of WQ for college teaching is its versatility, the possibility of introducing the student into the world or research, by using a resource he feels familiar with: Internet. Unlike Drent and Meelissen (2008), we do consider that using the TIC is an argument for both, learning and teaching methodology to change and produce an attractive formation process for the student. We agree with Chang, Chen and Hsu (2011), that using WQ in education, provides the students with skills to promote a cooperative learning, and assumption of individual roles of learning. In addition, these authors state that its use as a complement to traditional education is fundamental, since involvement of the students in the construction process of the content was major.

Selection of WQ module for the case of University of Cordoba, was due to its presence in the guide of contents of the course Research Methods and Didactic Application of the TIC, a course given in Grade 1st, of Primary Education at the School if Sciences of Education.

For students taking such course in 2011-2012 to be able to access contents of WQ topic block, an own account was assigned, thus accessing such module through platform Dipro 2.0.

Upon logging in, the students within the platform could just access the module to be implemented. The surrounding was the one of Moodle platform adapted to project Dipro 2.0. In preparing the module, the process started from materials created for such content within project Dipro 2.0, which are hosted at http://tecnologiaedu.us.es/dirpo2, and within it in module 12, included in block III, named *methodological aspects and evaluation.*

Materials and methods

From all contents proposed to organize this topic by teachers, the following materials were selected: a video containing an interview performed in the program Thesis of South Channel to Jordi Adell, and two articles in PDF, one formed by Jordi Adell (2004), and the other by Manuel Area (2005), which were hosted on in the Moddle section of the project. I was also facilitated within the platform, an explanatory presentation of the topic, in executable PowerPoint format, as well as documents, and a WQ repository. Previously to the initial section, teachers were proposed, within the platform, to answer questionnaire on previous notions about the topic, composed of 7 open questions, and one of multiple answer. This questionnaire was replicated at the end of the topic, for the students to evidence whether they have expanded their skills after realization of the WQ.

During the two weeks of the module, three discussion forums on the topic were performed, during the practical sessions by the various groups in which the

class was divided. The students questioned the most important aspects of this module, and difficulties they faced in performing their final activity, a WQ related to the research project that they were supposed to design within the course. Afterwards, the student could find the heading to be used in evaluating the WQ they had to realize.

The class was organized into groups of no more than five, or less than four members. Each group had to prepare a WQ in the topic of the research project, to be developed along the course, and which they would later load in electronic book format to the blog to be created as a portfolio system, taking into account that in it the three teachers of the course could find all activities to be developed by the students along the four-month period.
In this heading the should first identify themselves, as well as state the group number, and the topic of their project.

The heading included all of the WQ parts, in addition to three aspects, considered as important. First, orthography, then global evaluation of the work, and lastly, a part related to remarks detected along design of the activity.

The heading could be unloaded from www.edmetic.es within (http://www.edmetic.es/index.php/evaluacion/rubricas/rubrica-webquest). The highest score to be achieved by any student in the heading is 100 points, distributed into six gradable items: Scoring, introduction, task, process, evaluation and general. As already indicated, in the item named Scoring, orthography of the students is evaluated, since as they will become teachers for primary education, orthography is expected to be correct.

In the introduction to the WQ, it is evaluated whether it motivates the receptor students to realize the WQ, whether or not it is original, what type of information it provides, as well as whether it is presented on coherent basis and a good written composition. In the third item, related to the Task, it is evaluated whether the activity is properly designed, if there is an item of tasks, and if suitable to the cycle within the project is correct. Creativity of the student is also evaluated in this item, because if that targets eagerly continue with the action, is because they have understood what they will find ahead, and what they are supposed to do.

In the item Process, it is evaluated whether the role of each work group is properly defined, whether provided information is updated, if operating, and whether it is related to the topic, and the number of links or url it provides. In the item destined to Evaluation, performed by the students, now turned into teachers, of the activity performed by the participants, it is evaluated whether it evaluates the whole process, or just the parts, if the evaluation system is clear, as well as the scoring system. Finally, in the item named General, technical aspects of design of the tool are taken into account.

The heading is closed by an item named “Remarks”, which purpose is not other than collecting all incidents faced by the group at the time of performing the activity, which the teacher has evidence of. Likewise, this item will contain all aspects or doubts surged about the WQ. Finally, the student may know the grade he has made, in the box of final grade.

The quantitative study corresponds to an almost-experimental design. The initial population was composed of all of the students registered in the course, being N=71, 65 students composing the object sample of study, 47% of them women, and 53% men, both in the pretest and posttest (see table 1).

Table 1. Distribution of the sample

	Pretest	Postest
Population	71	71
Women sample	47%	47%
Men sample	53%	53%

Source: Own preparation

In collecting information, a 10-open-question questionnaire was used; in validating it the technique of expert judgment was used, the evaluation was made by active teachers, following these guides: Teachers of courses directly related to TIC, teachers of educative technology, given during the last 7 years, and holding experience in methodology related to WQ. Five experts were involved; two men, and three women, from Huelva, Sevilla Granada, and Murcia universities, respectively. From the 10 initial questions the experts excluded the following:
¿ Do you think that WebQuest help to develop the research ability?
¿Would you use the WebQuest for curricular

concretion of the various courses of the class, or level?

In dertermining previous skills to the methodology, the students registered in the course were administered an open-question questionnaire, as follows:

1. ¿What do you think a WebQuest (WQ) is?.
2. ¿Do you think that WQ help to develop the various objectives proposed by the Real Decree 1513, related to minimal teaching for Primary Education?
3. ¿What part of the WQ do you think is the most important?
4. ¿What is the origin of the WQ?
5. According to Manuel Area, ¿what are the three tasks direct and indirectly performed at designing a WQ
6. ¿Do you agree with the action process of a WQ designed by Dodge (2002), (page 5 of M. Area's document)
7. ¿How many items does a WQ contain? List them.
8. ¿Is the WebQuest useful for the students to expand in Internet?

At the end of the term for this module, given through the above mentioned platform –Dipro 2.0, the posttest was administered, in order to establish whether the methodology had been useful in assimilation of the basic concepts.

Taking into account that questions were of open answer, their content was analyzed, by searching for common aspects in such answers. For this purpose, the program of qualitative analysis of data Aquad Five was used, in its sixth edition, in this case its Spanish version.

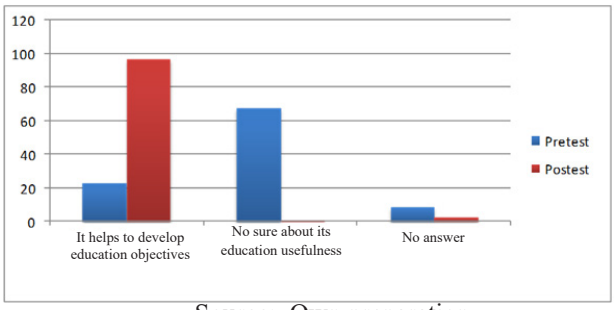
Results

The following are the most meaningful results from the analysis of each question.

1. ¿What do you thing a Web Quest –WQ is?

18% of the questioned students answered that a WQ was an online formation tool; 74% knew what it was, and 8% did not answer. From contributions made by the students we may infer that production of this content is necessary for technological development of the students, not only as a tool, to be applied in their professional exercise, but because it will help them to learn and critically select relevant information on any topic, in order to use it in the other courses of their formation curriculum.

After analyzing the exposition of the topic by the teacher, and reading documents and consult to the platform, 84% of the students gave a definition, which at their judgment, a WQ is, taking as a fundamental reference the document signed by Adell (2004). The remaining 11% stated not having clear enough the concept, and 5% did not answer.



Source; Own preparation

Graphic 1: 2. ¿Do you thing that WQ help to develop the various objectives proposed by the Real Decree 1513, related to minimal teaching for primary education?

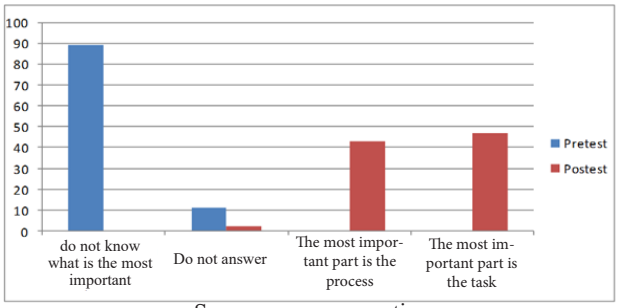
23% of the students considers that WQ may help to develop proposed objectives that, upon understanding it, and being a technological tool, would make the learning process more attractive. 68% stated not being sure about usefulness because of not being familiar with it, and 9% did not answered.

Upon placing into practice the methodology intended for development of this content, 97% considered WQ as a very useful, or useful tool in teaching-learning process in the stage of primary education. 0,5% was not sure about its usefulness, and 2,5% did not answer.

2. ¿What part of WQ do think is the most important?

89% stated not being sure about the most important part, because of lacking of information, to select any one in concrete, while 11% did not answer.

Graphic 2. ¿What part of WQ do you think is the most important?



Source: own preparation

After reading the articles and watching the video, 43% of the students of Grade 1st of Primary Education, think that the most important part of section of WQ is the Process, stating that there, is where the teacher should make more emphasis on writing the action to be realized by his students, since it lays the basis of the same. 47% selected the Task as the most important part, stating that during its design, organization of the classroom is shown. Lastly, the remaining 10% stated that they did not know how to assign a major importance to any part, since it is an activity that should be evaluated as a whole.

3. ¿What is the origin of WQ?

98% did not know its origin, and 2% did not answer. Upon reading the activity, 86% located the origin of WQ in 1995 at San Diego State University; 34% stated that Dogde and March (202) were the creators of the idea, data obtained from reading documents and watching videos located in the platform. 14% of the students, did not answer.

4. As pointed out by Area (2005), ¿what are the tasks direct and indirectly realized at designing a WQ?

In the first administration of the questionnaire, 100% of the participants did not answered the question, while in the second, 16% answered correctly, in function of data provided by the document facilitated in the platform. 50% gave an incomplete answer to the same question, and 25% did not answer.

5. ¿Do you agree with the action process of a WQ designed by Dodge (2002), (page 5 of Area's document)?

At the beginning of the methodological action, and application of the questionnaire, 75% did not answered, and 25% stated lacking of data to answer. Upon administering the methodology through a DIPRO 2.0 platform, 78% of the students agreed with the process consulted in Area's document, while 12% was not in full agreement, stating aspects such as curricular organization, ecology of the classroom and the center as determining variables of the same. 10% did not answer.

6. ¿How many ítems does a WQ have? List them.

95% during the first administration of the questionnaire, stated that they did not know the items of a WQ, and 5% did not answer. However, this data turned over once developed the teaching innovation; 98% answered correctly, and just 2% had forgotten mention any section, or did not answered.

7. ¿Is WQ useful for the students to expand on Internet?

To end the questionnaire, the students were asked on the binomial WQ-Internet; upon the first administration 84% stated not having enough information to decide in this connection; 13% stated that it probably would be a good strategy for students to expand on what performing a critical search in the network would mean and imply. Just 3% did not answer.

Discussion of results

In 2007, Helms-Park, Radia and Stapleton expressed how current young individuals would prefer to consult Internet, and within it, virtual libraries, previously to appeal to a conventional one. As a result of this type of studies, the European Committee, in the same year, began to forward which will become policies on the use and consumption of communication means, mainly Internet. Years later, in 2010 the work performed by Van de Vord, showed the same data again. As already pointed out by Drent and Meelisse in 2008, it is sometimes assumed that the simple use of TIC at classrooms, the named technological innovation will make learning to be better. However, although Van de Vord (2010) and Drent and Meelisse's (2008) affirmations may be generalizable to the whole education population, results of this study demonstrate that innovation and TIC are a correct combination for development of new teaching-

learning strategies, provided by the Implantation of the Eurpoean Space of Higher Education.

However, although technology of information and communication –TIC are a part of our social, family and professional life, in some education levels its presence is more or less relative, and students training to use it is limited; previous formation, both by teachers and students is necessary. Therefore, the myth that our students are named "digital natives" (Prensky 2008) falls, in our judgment confirming Prensky's statement in 2010 retracting from his thesis in 2008. The study performed by Marin and Reche (2011, 2012), and Marin and Maldonado (2010), reflects that implication of the students with the TIC in the education scope, where beliefs regarding technologies are confirmed. Likewise, in the study prepared by Marin and Cabero (2010) such consideration of the concept of "digital native," or net generation, is confirmed again. As we may see in this study, the students presented an skeptical attitude before higher education toward the TIC and, after participating in the experience, as it happened to Serrano, Muñoz and Lopez' (2012) research, who applied technologies and cooperative learning development, concretely using the program *Courselab* with students for the Master's Degree of Psycho-pedagogy, in such study, as presented here, innovation in learning process was achieved by using such digital resource.

These aspect in this final item, lead us to determine that on-line formation through the LMS and 2.0 tools, are a reality, and experiences like the one presented here, are the future of Spanish universities in particular, and international universities in general.

Before the technological panorama presented to us, the function of universities, result from ESHE, regarding media, is no other but training the students in development (and achievement, in some cases), of digital competence, that is, education should be promoted on means which do no insulate them from their social and professional environment. As shown in this project, and in agreement with results states in Serrano, Muñoz and Lopez' work (2012), formation environments for development of Higher Education, help to achieve such competence.

In addition, virtuallity of teaching environments, developed today at universities, given their interactivity and two-direction feature, are encouraging students increased participation in the whole teaching-learning process, as claimed by Palacios (2005), since as we stated above, ESHE implication has encouraged them to become active constructors of their knowledge, as shown by evaluations take by students involved in the study, both previously and after undergoing the experience on Dipro 2.0 formative environment (Marin, 2012; 2014).

Regarding the use of WebQuest as a university classroom methodology, we me conclude that it is a powerful tool, which, introduced in a simple manner, supported by a LMS, may explain all questions of the students, when ignorance is the general premise. If the students have had previous contact with this tool, it facilitates its use in higher education (Marin, 2012).

As we have observed through data provided, previously to use the methodology via tele-formation platform, the students held scarce knowledge on the same, turning into a great challenge for the teacher to pass its content on clear and simple basis (Maldonado, 2012; Marin and Maldonado, 2010). Use of videos, as well as support reading documents is a well valued strategy, since it explains any questions which the students may still have after the magisterial lesson. As we see, combination of a traditional methodology, such as the magisterial less, with a technological and innovating ones, such as tele-formation –Moddle, and 2.0 tools, leads us to open the horizon of teaching-learning process.

Conclusions

Experiences, such as the one developed through the Project Dipro 2.0, are the future of formation at universities, resulting from ESHE, since it provides the students with the possibility of bearing a more active attitude, which Palomares et al (2007) already mentioned as a cardinal element for its learning to be continuous.

Notwithstanding, this experience has shown some questions that should be resolved. One of them is formation both of students and teachers on the use of this type of resources presented herein, digital training of students would resolve this issue. Other one is that assumption of methodological innovation is exclusively run hand by hand with the student, when the reality shows that the students should learn to use 2.0 tools, considered as educative when a teacher has previously shown them (Marin 2012). In addition, the lack of use of tele-formation platforms, cause that digital formation processes may result unconcluded or non-satisfactorily overcome; therefore, education institutions should create formation plans for proper use of such platforms.

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