

# Students as Producers and Consumers of Primary Contents Using Web 2.0 Tools

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## ABSTRACT

In most educational experiences, the students generate contents that are not the primary source of knowledge, but they are only used for evaluation, and accessed only by the course teacher. Moreover, the teachers are in charge of preparing all necessary documents for their courses, either preparing their own material or collecting information from other authors. This way of working assumes that students do not have the capability to generate quality content, which may provide support for their peers in the learning process. Therefore, we can specify the problem approached by this research as follows: content generated by students are not considered as a primary source of knowledge, mainly because the traditional paradigm sees the teacher as the only person empowered to produce knowledge. The solution presented in this research is a methodology of using Web 2.0 authoring tools that can support the learning process, delegating in the students the role of being producers and consumers of their own knowledge. This article describes two cases where students assume the role of knowledge producers to be used as a primary source of content, and as consumers of this knowledge. To implement the planned activities, a program to level the ICT (Information and Communication Technologies) skills was developed. Thus, it could ensure the participation of students in each activity designed to facilitate the use of unconventional web tools in the student community.

**Keywords:** Web 2.0 tools, learning process, authoring tools, learning methodology.

## 1. INTRODUCTION

Traditionally, learning processes have been focused on the teacher. Teacher is who coordinates the actions oriented to the learning and is also the lead manager for the transmission of content, selecting information, assign tasks, or coordinate work. In this approach it is assumed that students do not have sufficient skills to generate knowledge that favors their own learning processes and also that of their peers.

This form of teaching and learning is not responding to current demands for the future society. It is for this reason that education systems are implementing actions to have self-directed learners, committed to their training, students whose skills and interests are now mobilized to learn meaningfully and to work collaboratively, once they enter the professional world.

The new teaching and learning practices consider this idea and suggest that the students become a primary source of knowledge for themselves, their peers and educational community, among other actors [1] [2] [3] [4] [5]. Some investigations arise

that propose a change in this paradigm, those that consider the student as a source of authoring content for the subject, which also allows the development of other skills and competences (creativity, innovation, collaborative work, etc.) [6] [7].

The literature reports unexpected benefits for the effects of peer education. Lasry [8] notes that it promotes the mastery of basic conceptualization, activation of prior knowledge and skills to solve problems facing students learning in the traditional way. He further notes that this effect favors even pass rates in areas of training where indicators are not successful, for example science.

Innovation in teaching practices and new learning methodologies are being encouraged by the potential of the Internet for learning. The available tools facilitate the generation and distribution of content among peers, as they become available to users with various options of interaction which favorably affect their educational processes, and these are an option in the formal education system.

Today, due to the development of the Web, there is a comprehensive set of tools for creating and publishing content in different formats (video, slides, multimedia presentations, timelines, podcasts, shared documents, etc.). They also allow interaction between students in a different space and context of the classroom. This leads to new scenarios that can be used to promote non-traditional learning activities. In turn, the variety of available tools to publish content to work collaboratively to develop projects, enable to respond to the diversity of styles and new ways in which students approach to knowledge. Therefore, for an effective use of them, an appropriate methodology together with an appropriate virtual platform are required, creating a channel for managing the generated content, and promoting the participation and communication among the actors of the learning process.

This article describes two cases where students assume the role of knowledge producers to be used as a primary source of content, and as consumers of this knowledge. To implement the planned activities, a program to level the ICT skills was developed. Thus, it could ensure the participation of students in each activity designed to facilitate the use of unconventional web tools in the student community.

In the first case, the experience was to design activities for a course in Organic Chemistry, for

students of Media Pedagogy in Natural Sciences and Biology, who used Web 2.0 authoring tools to produce knowledge that later is made available to their peers and even to students from other careers of the same University. In the second case, a Learning Virtual Community (LVC) was created for students in first and second year of a computer science career. Both cases are described in detail below.

## **2. GENERAL DESCRIPTION OF THE PROBLEM AND SOLUTION**

It is possible to specify the problem addressed by this research as follows: content generated by students are not considered as a primary source of knowledge, mainly because the traditional paradigm sees the teacher as the only person empowered to produce knowledge. Thus, the valuable potential of content generation, during the process of teaching and learning, fails to take advantage of. In addition to this, the requested content format for students (paper, Word, PowerPoint, PDF) does not favor further distribution or publication in digital media.

The solution presented in this research is a methodology of using Web 2.0 authoring tools that can support the learning process, delegating in the students the role of being producers and consumers of their own knowledge.

## **3. FIRST CASE: CHEMISTRY COURSES**

Based on Lasry proposal [7] called "Instructional peer", the experience for students in the chemical area was to use web 2.0 tools for specific content authoring. Students were selected based on their interests, according to the subjects identified in the course program. To this end, each student or group of students selected a tool to use, for which previously were trained by the teacher: Some of these tools were: Slideshare [9], Blogger [10], Dipity [11], Cacao [12], GoogleDocs [13].

The students' work consisted of: select information, organize ideas, prepare presentations and select a broadcast medium for their peers, as on-campus as online. Complementing the above, each student or group of students took an active role for feedback to their peers, according to the needs of learning that they pose. In this case, we used communication

tools, such as a messaging system and social networks.

The activity was organized to encourage participation of students from two academic programs whose only connection was the same signature incorporated into their curricula, but traditionally, there is no interaction between them. Thus, educational content, designed and produced by students were considered as a primary source of information, and a more open educational community used them. In this case, we worked with two courses at the same level but with different educational contexts (agronomy and pedagogy).

As a motivation for their future teaching role, the pedagogy students prepared materials designed to develop meaningful learning, in a scientific subject with high failure rate. This allowed them to create knowledge and quality information in a digital format, which it was modern and attractive. For this purpose technological tools of Web 2.0 were used: GoogleDocs, Slideshare, Dipity and Blogger. Simultaneously, the students worked collaboratively to produce quality information through options offered by the Dropbox tool [14].

For example, the contents of "intermolecular attractions" were developed using "blogger" as authoring tool. This initiative was made available to students from three different courses using the Web as a distribution channel created content. The interaction among students, encouraged discussion of the issue and recognize the contributions that each of them independently could present to enrich their learning. Furthermore, this interaction identified content most valued by the students themselves, identifying the most popular content and most times were consulted. In this way, students could recognize the quality work among their peers.

For this case, the knowledge consumers were students of the Agriculture career, who value the experience positively, since they could improve their grades with the new material generated by their peers. Moreover, the students who produce the knowledge also improved their learning, but also recognized the value of being the main agents of their own learning process, supported by technology tools that were included to innovate traditional teaching practices with low academic results.

#### **4, SECOND CASE: COMPUTER SCIENCE COURSES**

In the second case, a Learning Virtual Community (LVC) was created for students in first and second year of a computer science career. In 2010 and 2011, each of the students of first and second year had to create 15 blogs in order to describe their learning experiences linked to the skills acquired in each of the courses. Thus, about 1200 blogs were created, and they were incorporated into the LVC, becoming the primary source of knowledge for students that enrolled in 2011 and 2012. To organize the blogs, the students used templates in GoogleDocs, and they created the blogs using the Blogger system. All this was structured on a website creating the LVC. Students were be able to search by courses, keywords or author. A rating system and recommendations of different blogs is being defined, which will allow to rank each of the contributions. Besides, the LVC allows the emergence of peers and experts concerning the various issues, so that students have the elements of classification or perception of the best contributions to the community. As an example, a blog that is visited frequently results in that the author of this blog becomes more popular in the community. Currently, the impact of the LVC in student learning is being evaluated.

#### **5. RESULTS**

According to the results of the Organic Chemistry course from Pedagogy in Education Sciences career, the student approval rate was higher than previous years. However, it is necessary to evaluate if this is a trend that continues over time. Equivalently, this experience also improved the approval rate of the group of students from the Agriculture career, who acted as knowledge consumers.

Table 1 shows that from the total number of students enrolled in the courses, 96% of them participated actively in the activities. A survey was applied using Facebook; it established that 85% of the participants appreciated the experience as well as their peers recognized an interlocutor who is able to promote and develop learning. This correlates with the approval rating for each subject reached 67%, exceeding 45% of the previous semester.

**Table 1** – Results of experience in Chemistry courses

Indicator	Percentage
Student participation	96%
Positive assessment of the experience	85%
Approval rate	67%

The interaction between different groups of students helped to identify and highlight those contributions that were selected for their quality.

Regarding the content authoring through Web 2.0 tools such as Dropbox, Slideshare, Blogger, Google Docs and Dipity, the ICT tools are a support in the learning process, allowing the diversification and creation of content covered by students of the cases described early. As well, all these tools constitute a contribution in the authoring content, when allowing the decentralization of the applications in the Moodle Learning Management System (because it is not necessary that the ICT tool are integrated to Moodle, since these applications are in the “cloud”).

Finally, we included a Social component to the platform (JomSocial [15]) in order to improve the model for authoring content, then room and channels of participation are generated so that the students, who the professor considers advisable, can participate in the learning communities being this one of the landmarks of the model. In other words, it is not limited to the number of students formally enrolled in a subject since it can potentially be shared by students of other careers and by all the university community.

## 6. CONCLUSIONS

The peer instructional using web 2.0 authoring tools allow active interaction beyond the traditional classroom, and help to develop quality learning in courses such as Chemistry and Programming.

The use of these tools can develop creativity, while promoting interaction to achieve the collaborative work, both considered transcendental competences for modern professional life. The student’s skills to produce quality content are recognized. These contents are appropriate to develop learning within a community linked by an interest in learning a specific content.

The students' self esteem is strengthened by the contributions of their peers and the community became involved with this initiative, as the individual interests and abilities of the actors are considered.

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