

# ANALYSIS OF THE BENEFITS OF WIKI PLATFORMS IN UNIVERSITY EDUCATION

Juan Ortega-Valiente<sup>1</sup>, Antonio J. Reinoso<sup>1</sup> and Rocio Muñoz-Mansilla<sup>2</sup>

<sup>1</sup>Universidad Alfonso X el Sabio, Madrid, Spain

<sup>2</sup>UNED, Madrid, Spain

## ABSTRACT

The implementation of the Bologna Process has brought a significant change to the university educational system, requiring changes in the core of the degrees themselves as well as in the way in which students are taught, including the means for accessing information. One of its objectives is also to help to increase the compatibility between the different educational programs in the countries of the EU. But the most important changes require the implementation of systems to support the development of the collaborative techniques that students need to learn to be competitive, alongside with better interaction between them and the teachers. These requirements have opened up the way for new multimedia and collaborative tools that can be incorporated to the classroom to fulfill these requirements. Among all these tools, there is one in particular that arises above the rest because of its potential and that has also gained a lot of popularity in the last few years: the wiki platform. It constitutes the main focus of this article, as the tool is currently being researched and studied to improve its adaptability and positive impact in the students' learning process.

## KEYWORDS

Wikis, EHEA, Wiki Engine, E-learning, web services.

## 1. INTRODUCTION

The appearance of the Bologna Process, proposed by the EU members of EHEA, meant a great deal of change for universities, and their teaching staff as it is a new approach to education, that implicitly requires that most degrees have to be redesigned and teaching techniques need to be updated. Apart from this, it also represents a challenge for students that see their traditional learning process altered, and improved.

This new approach is also heavily influenced by the appearance of new technologies like the Internet that are becoming everyday a more common part of our occupations and lifestyle. There are many technologies that are being implemented and studied for its possible applications in the classrooms, and one in particular is becoming considerably popular in recent years: *the wiki platforms*.

The Wiki platform is a tool designed to be simple and user-friendly, and its main objective is to provide a simple means of collaborative work among different users. A really good example of this kind of interaction is the online encyclopedia Wikipedia, which has already received hundreds of millions of articles, revisions and visits in more than 255 languages. Together with blogs and social networks, wikis are considered to be part of web 2.0 (Hinchcliffe, 2006), as they share part of the concept of full interaction between users and web services.

Wikis present a new distributed system in which information is no longer centralized in a single node (*or cluster*), with full interaction as its base, and that allows users to collaborate by sharing without restraint their knowledge and experience, which directly benefits the user community, as the more contributions are made the more complete the system becomes (Benkler, 2006).

For universities, this tool presented itself as a great opportunity to incorporate collaborative tasks in their courses without much difficulty. The main advantages of this platform are that it allows collaborative editions through a simple user-friendly interface, it keeps a complete history of editions made to each article and it is highly customizable, allowing all kinds of multimedia content and integration with other systems such as blogs, webs, intranet portals or office suites.

There have been already several studies in universities worldwide regarding the implementation of wiki platforms in a subject as part of a degree (Ortega and Reinoso, 2011) (Reinoso, 2009) (Cordoba and Cuesta, 2009) (Freire, 2005), as well as the online initiative “wikiversity.org”, and in all these studies we can observe that their results were satisfactory, so much that further studies and tests have been appointed in many cases. A good example of this is the Spanish magazine “*Revista de Docencia Universitaria*” (Area, 2009) (Barberá, 2009) which published on November 2009 a special issue dedicated entirely to the use and implementation of wikis in university environments. This ties in together with other studies (Celaya, 2008) (Ebersbach, 2005) (Carlin, 2007) that explain the application of wikis in corporate environments, where wikis take both the role of knowledge management tools and learning tools.

More importantly, these studies have been taken in subjects of degrees not only from computer-related degrees, but from those of varied nature such as biology, arts, architecture or law; in addition to different corporate environments. Furthermore the results in these case studies were quite positive, encouraging researchers to continue with the implementation of the platform and its use in the courses. This shows that despite some limitations found, which can be solved easily either with design changes or implementation changes, the benefits obtained are great, and that further improvements will certainly augment the positive impact that wikis can have in learning environments.

The purpose of the following paper is to present the method followed to implement the wiki platform in a single subject from the degree in Computer Engineering at “*Alfonso X el Sabio*” university and how the positive results obtained have motivated the researchers to further implement the wiki to the whole university. Unfortunately, due to the limited size of the sample the results presented are preliminary, but they already allow us to glimpse the true impact that wikis can have once fully implemented.

## 2. IMPLEMENTATION OF A WIKI IN THE UNIVERSITY

### 2.1 Background

Before designing and implementing a new wiki, it was imperative that a study was made to analyze the implementation of wikis done by other educational centers and universities. This study took place mostly regarding Spanish universities, due to the proximity to our study case. The degrees in which wikis had been implemented ranged from the expected degrees in engineering to art, biology, architecture and law, amongst others, as it can be seen in the papers published in monographs IV and V of “*Revista de Docencia Universitaria*” referenced in (Area, 2009) and (Barberá, 2009).

In all these cases, the wikis were used to implement team assignments, alongside some individual assignments, and students had to use the platform as their main communication and work tool. Teachers had greater interaction with the students, especially thanks to the edition history maintained by the wiki, which allows teachers to evaluate better both the team and the individual students. Additionally, this feature also allowed the teacher to help those teams that went astray much more efficiently.

### 2.2 Case Study

The study was taken in a subject part of the 4<sup>th</sup> year of the Computer Engineering degree in “*Alfonso X el Sabio*” university, where the assignments that students usually had to complete were modified in order to encourage the usage of the wiki platform. The students were given the choice of using the new wiki platform to complete their tasks. A total of 35 students agreed to take part in this study. Their task was simple; they had to use the wiki platform, which acted as a support tool, to complete the 3 assignments that were progressively handed by the teacher. The students had to complete them working collaboratively in teams of 4 or 5 members. This way it was possible to evaluate the use of the wiki, whether it was useful or not for the students and the impact it had in the quality of the assignments made by the students.

As any other iterative process, the results obtained in each study help develop better the platform for the next year and, although not perfect, the tool is ready for implementation in courses with only minor details to improve but that will not affect the positive outcome of the experience. The platform enabled the teacher full

monitoring capabilities so that he could help more efficiently those students that needed and later to better evaluate their efforts.

## 2.3 Results

The main source of the results are the own statistics and databases of the wiki, which offer information about the usage given, the data contained, the complete history of each article and statistics about user access. Once processed, this data can give us complex statistics such as usage profiles or frequency and continuity of editions. In the data shown on “Table 1” we can observe that while only a few pages were made in this case study, the amount of editions was considerable, exceeding an average of 34 editions per article.

This follows the same tendency found in other important wikis (*such as Wikipedia*), but in this case we determined that students accessed the articles sometimes just to re-read them and check for mistakes on the unfinished content and to review editions made by other members of their group. Another point of interest is the high number of discussion pages used by the students during the course to communicate and discuss the next steps to do on their respective assignments.

Table 1. Wiki Statistics

Content pages	57
All pages ( <i>including discussions</i> )	424
Uploaded files	176
Registered users	65
Total page editions	1.938
Average edits per page	4,57
Total Visits	20.757
Total visits per edition	10,71

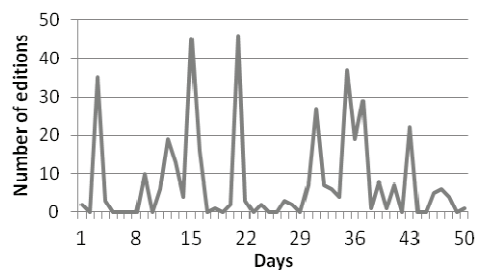


Figure 1. Average revisions during case study

In “Figure 1” is represented the amount of revisions made during the first months by the students. It is clear that there is no continuity, and there are obvious spikes both during the start and end of each of the assignments, especially in the first two, being less steep on the last one mainly because students were more accustomed to the way the wiki platform works and contributions were each made with more content.

The assignments handled by the 35 students that participated in the study were slightly better than those presented by the students that did not participate and those of previous years, proving that the platform had a positive effect, even if is still in a test phase. Apart from this, students were given at the end of the subject a questionnaire to obtain their experience about the use of the wiki and its application to the subject, as well as to get any recommendations that they may have had. Their answers were positive in general, indicating that 72% found the wiki very useful and appropriate for collaborative assignments; but on the other hand when asked about implementing a wiki for the whole university 48% suggested that a more progressive implementation would be preferred to ensure that the students get accustomed to it appropriately.

After this evaluation several changes were made to the platform to fix the flaws detected during the analysis of the data obtained from the case study. The 4 most relevant features added were:

- A simple access control system was added to allow users already registered in the university’s web portal to be able to use the same credentials to access the wiki.
- Instant notifications to users regarding editions made to any article they choose.
- Categories were added to better classify contents of the wiki depending on their area/degree.
- WYSIWYG editor to avoid users the need to learn the wiki’s own markup language (*wikitext*).

## 3. CONCLUSIONS

Wikis represent a new way of working collaboratively towards a common goal and are especially attractive to university environment because of it. They have become highly popular in many areas, as nowadays we can see wikis almost everywhere, from schools, learning centers, fan-based wikis, and online encyclopedias. We can find them even at the workplace, where internal private wikis are commonplace.

On the other hand, the application of the Bologna Process has given focus again to these collaborative tools, and to their potential educational benefits, as their collaborative approach fits with some of the requirements specified by the EHEA in this process. Therefore mimicking the same success shown in other areas, wikis are proving that they can be beneficial for both teachers and students, in some cases allowing teachers and students to get more accustomed to the use of new technologies in the classroom.

The initiative presented, codenamed “Alfonso X el Sabio” (<http://wiki.uax.es>), is a wiki to be used by all the university, not only in computer-related subjects, and has so far achieved good results and good acceptance from the students that have already had the chance to use it as part of their everyday routine. While the results shown only represent a small fraction of the university, they are very promising and inspire us to develop it further. There is always room for improvement but so far the results are satisfactory and, more importantly, students have expressed their interest in its usage on subjects.

However, even after it was upgraded, this wiki platform still presents a challenge, as teachers and students must get accustomed to this technology and, while not all 100% of subjects will get active use of the wiki, it is clear that a large amount of them will definitely benefit from it, in particular those that heavily rely on collaborative work.

But this challenge is also affected by the fact that as it is a new technology and requires some adaptation to it, teachers become reluctant to use it due to them being intimidated by these new technologies. For this reason, among others, small presentations and demonstrations are planned to take place in the university to show other teachers that wikis are in fact quite easy to use and implement into courses, hoping to reduce their reluctance to adopt new technologies.

In conclusion, this wiki not only presents a new opportunity to enrich the classroom’s experience, but to improve the whole learning process of the students and give teachers new tools with which to enrich their own subjects and ultimately improve the whole university learning experience itself.

## REFERENCES

- Area, M. et al, 2009. WIKI y educación superior en España (II Parte). *Red U Revista de docencia Universitaria, Monográfico V*.
- Barberá, E. et al, 2009. WIKI y educación superior en España (I Parte). *Red U Revista de docencia Universitaria, Monográfico IV*.
- Benkler, Y., 2006. *The Wealth of Networks: How social production transforms markets and freedom*. Yale University Press, Yale.
- Carlin, D., 2007. Corporate wikis go Viral. *Bloomberg Businessweek*. [Online] Available at: <[http://www.businessweek.com/technology/content/mar2007/tc20070312\\_476504.htm](http://www.businessweek.com/technology/content/mar2007/tc20070312_476504.htm)> [Accessed 11 November 2011].
- Celaya, J. 2008. *La empresa en la Web 2.0*. Ediciones Gestión 2000, Barcelona.
- Cordoba, J. and Cuesta, P., 2009. Adaptando un sistema de Wikis para su uso educativo. *XV JENUI*. Vigo, Spain.
- Ebersbach, A. et al, 2005. *Wiki. Web Collaboration*. Geindelberg: Springer Verlag, Berlin.
- Freire, J., 2005. Evaluación de una experiencia docente. [Online] Available at: <[http://nomada.blogs.com/jfreire/2005/02/evaluacin\\_de\\_un\\_1.html](http://nomada.blogs.com/jfreire/2005/02/evaluacin_de_un_1.html)>. [Accessed 10 December 2011].
- Hinchcliffé, D., 2006. The state of Web 2.0. *Web Services Journal*.
- Ortega, J. and Reinoso, A., 2011. New educational approach based on the use of wiki platforms in university environments. *Proceedings of the 7<sup>th</sup> International Conference on Next Generation Web Services*. Salamanca, Spain.
- Reinoso, A., 2009. Análisis de la incorporación de una plataforma wiki a la docencia de la asignatura ‘nuevas tecnologías de la información’. *Red U Revista de docencia Universitaria, Monográfico V*.