Building a collaborative learning environment based in Wiki

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The collaboration is a methodology that allows to improve the ability of each team member that take part in the learning. It is very important the user be able to write and to share documents and to build links among their in a collaborative environment. The Wikis fits in these requirements. Wikis are a very simple tool that allows big groups to collaborate in the documents generation. We have introduced collaborative learning with Wikis in a pre-graduate course of computer science. To carry out this proposal we have used a blended learning methodology. The students have collaborated to write and develop the solutions of a lot of algorithmic problems using a Wiki. The proposal has obtained good results with good evaluation of the students, but we have learned good lessons for improving the methodology.

Keyworks Collaborative learning; Blended Learning; Collaboration tools; Learning communities

1. Introduction

The collaborative learning is widely accepted. There are a lot of environments that allow several members to collaborate. So the members of a group can work together without they stand in the same place. However the software can do more difficult the work of the team: sometimes the interface and functionality have a hard learning and another times the software haven't got much flexibility for adapting to the roles of the members of the group. So we need to find an environment that join easy use and learning and flexibility. On the other hand the procedures of work in the groups are as important as the software for obtaining good results.

In the rest of the paper we explain what the social software is and as make easy the collaboration, describe the Wiki characteristics and as fit in our needs. After we explain as we have applied this in a pre-graduate course of computer science, describe the results and the improvements that we can carry out.

2. Social software and collaboration

2.1 Social software

Social software enables people to rendezvous, connect or collaborate through computer-mediated communication and to form online communities [1]. A virtual community or online community is a group of people that primarily or initially communicates or interacts via the Internet [2]. These communities are based in the communication but allow to join the target of working. People form online communities by combining one-to-one (e.g., email and instant messaging), one-to-many (Web pages and blogs), and many-to-many (Wikis) communication modes. In many online communities, real life meetings become part of the communication repertoire.

One of the most important characteristics of the new social software is the lack of hierarchy in the users. All the users can take the role of reader and the role of writer and inspector too. This allows a greater flexibility in the user task.

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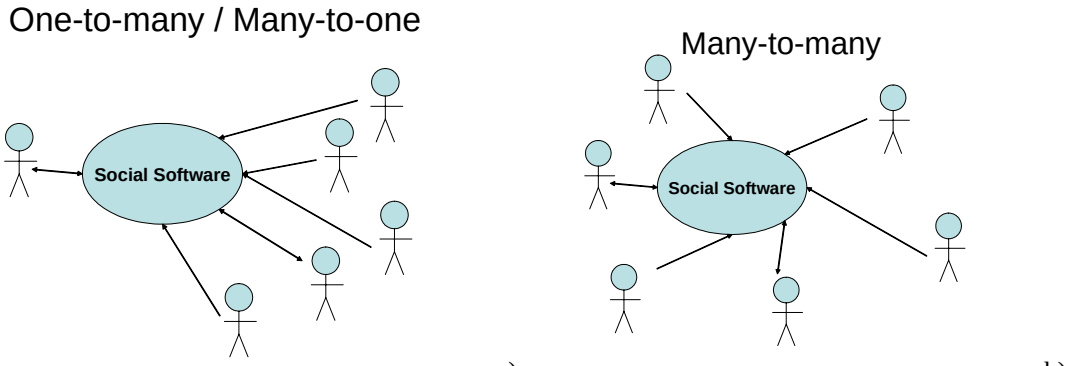

Fig. 1 The social software is changing from a focus where one user published, many users read and made comments but only to that user a). Now b) all users can publish and make comments and updates and all can see the comments of the rest of the users.

In the new social software has less control over the users and what are they doing and the people can do more things; the software makes easy the change of role for working to several levels.

2.2 Collaboration

Now it is very easy asks other user that help to write a document, with few steps the other user is editing my document in the Web. This allows the synchronization of task.

2.3 Wikis

The creator of the Wikis, Ward Cunningham [3], defines Wiki as a freely expandable collection of interlinked Web pages, a hypertext system for storing and modifying information – a database, where each page is easily editable by any user with a forms-capable Web browser client. The key concept is that everyone can write, and read of course, the pages without special tools. So a user writes a document that he/she can link with other documents and many users read and correct this document and they add new information if it is necessary. Wikis are a very simple tool that allows big groups to collaborate in the documents generation.

2.4 Blended learning

We think that we can coordinate the real world and the virtual world and the two spaces can feedback to improvement the work. So we try propose activities that contains task in the virtual environment and task in the class with the teacher and other students.

3 Putting these ideas into practice

3.1 Incorporation of the Wiki in the course

We have used a Wiki in a pre-graduate course of computer science, specifically to algorithm design course. In this course is very important that the students research several types of algorithms and as they can be applied to solve complex problems. In the class, the teacher can explain the main pattern of every type of algorithm but few examples can be revised. So it is necessary the students work in groups with

different problems and it is very interesting to prepare a library where all the students can look up more samples. So we consider the best alternative was a Wiki.

3.2 Student Tasks

Steps of the activity propose in the first semester of the algorithm course in the second year of the computer science degree in the University of Oviedo:

- Students join in groups of three members.
- The groups search problems to resolve.
- The group sends e-mail with the favourite problems.
- The teacher inserts in the table of contents of the Wiki the assigned problem.
- The group writes the first rough copy.
- The group asks the teacher several questions about the problem.
- The teacher and volunteers inspect the work doing by each group.
- The group improves the work with these comments.
- The group develops the program what solves the problem and includes it in the Wiki.
- Some groups explain their work in the class to the rest of students.
- All the students use the solved problems in the Wiki for studying and testing other problems.

In the process the students have to do real and virtual meetings: real meetings for join in a group, for meeting with the teacher and for explaining their work in class and virtual meetings for reading related material with the problem, writing the solution of the problem, reading the comments by the inspectors and improving and writing the final solution.

The students have to use several tools for communicating with the teacher and their companion: e-mail to send the initial proposal to the teacher, Wiki to receive the assigned problem, to write the initial solution, to read the comments and to improve the solution. Finally they have to use a tool for making the presentation.

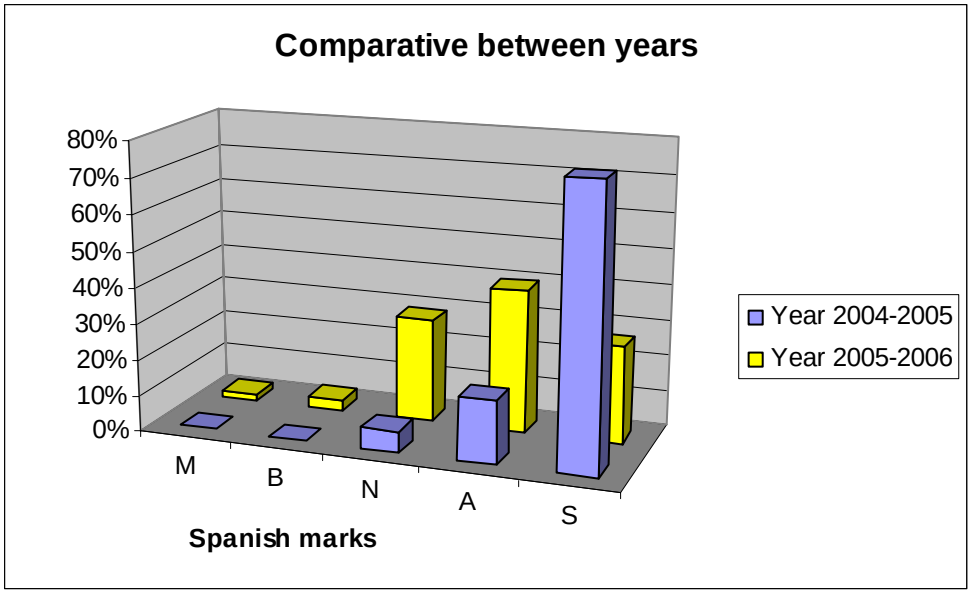

Fig. 2 *Comparative of results*. In this graph is showed the improvement of the marks between the year of the experiment and the year before.

3.3 Results

In this experience, 203 students have participated, writing 72 works. The students have worked virtual and in the same place. The possibility of revision that offer the Wikis have done easy to the teacher to write comments and improving the quality of the works and the presentation in class have allowed detect the last problems. Most of the works have had a high quality.

We have obtained better results than before years which probes that the learning is more significant and wider (Fig. 2).

However we are aware of it is possible to improve the process taking advantage of the potentially of the Wikis. For example, the teacher spends lots of time in the revision of the works and this can be a more collaborative work shared with some students.

4. Conclusion

The Wikis are systems that have a balance between flexibility and easy use and they have good characteristics for learning environments.

We have put in practice activities using Wikis but not only and the students have accept the tool without major problems. We have discovered a good adaptation and a big potential to improve the process using the Wikis.

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