PROGRESSIVE EVALUATION AND AUTO EVALUATION THROUGH WIKIS.

Ignacio González Alonso, Mercedes R. Fernández Alcalá, Jose A. López Brugos
Computer Science Department. 33204. Campus de Viesques,
Gijón, Asturias/ Spain.
gonzalezaloignacio@uniovi.es, uo184703@uniovi.es, brugos@uniovi.es

Abstract

Some decades ago collaborative work and PBL started to been used in education, creating a trend that will finish in the web utilization for learning. Several studies were developed linked with Wikis that demonstrates the rapid access to Wiki tools by students to achieve their course's assignments.

Wiki use by students rose up with annotations inside them. The increasing rate was possible offering more specific searching systems, with a lower response time and also establishing better defined searching criteria. Other results were also achieved. This trend allows a deeper technologic interaction within the classroom.

Here will be described the progressive evaluation process by teacher and auto evaluation applied to a classroom in Oviedo's University using a MediaWiki. MediaWiki played the CMS's role. Results try to demonstrate the possibility of establishing an evaluation system of big groups of students (over 200) in a virtual individualized way by the employment of the MediaWiki Categories system. Through several process, the student elaborates an assignment and after that teacher "virtually review it" online to add one or many categories.

These categories are the core of the evaluation process, and they were the "virtualization" of the evaluation system, categories were written one time and used many. The reviewing process allowed students to get the category meaning and then correcting their works. Later students ask for review again just by another category. Evaluation on this way generates automatically "failed assignments' lists", "passed assignments' lists", "review request's lists"...Evaluation on this manner represents an enormous improvement in the creation of corrections and qualifications lists. At the same time it facilitates a semi-personalized teaching for students' big groups (problem that begins with European Education Space development).

The proof case success represents a hope to complete a deeper scope study.

Keywords
Progressive Evaluation, Auto-Evaluation, Collaborative Work, Learning, E-learning, Wiki, Innovation, PBL, Marketing statistics.

1. INTRODUCTION

The possibilities to edit web pages using Wikis (a previous to Web 2.0.[1] technologies) has increase their users. They allow an easy way to edit contents on the web. At the same time education needs of the last years shows that practical teaching is a serious trend, and in this point Wikis become more and more important.

Wikis allow remote access to contents so can be used from any location and make all team members productive participants [2]. Then students were accepting a deeper responsibility to acquire their knowledge. Wikis are proposed to make students participants of their own learning process as an evaluation and auto-evaluation tool.

In the first part of the article new ways to teaching will be described in replace of traditional ones inside classrooms. New ways that are putting their attention on collaborative works, sometimes using wikis. On the second section the methodology followed by our study will be summarized. Next one will be

about results obtained. And the last part is to talk about our conclusions and further work proposed after the analysis of the experiment.

2. NOWADAYS THEORIES TO EDUCATION

Education had and will always play an very important role in today's students and will also play it with the professionals' careers of the future. Teachers will be encourage to accomplish this task using methods that show deeper capabilities to play that role, when at the same time they are linked with real world. There is a need in using the new TI infrastructure [3].

1.1 From/In the experience to learning

Carballo[4] had proposed a learning method called “From the experience to learning”, where he explained that it’s necessary to integrate inside teaching-learning process more innovations. He described a method where a culture of sharing information will facilitates learning. This method focused their course planning in a clear transmission of the goals and also in a friendly communication between participants. In other words, students will have the opportunity to know what their goals will be to help them to decide what their compromise with the group they will have. In their team work they will do a continuous communication and negotiation, so good and cordial interactions will be required in their tasks.

Teaching on that method requires playing the role of moderator and facilitator of contents [5] and for the student starting a continuous search outside books. A way of teaching that replaces traditional paradigms in classrooms.

1.2 Constructivism

Constructivism had different approximation theories [6]. It defines knowledge like a mental process, that it was developed when the individual gets information from and interacts with its environment [7]. These theories had constructed knowledge by themselves, using every possible resource. Some examples are communication skills, analysis skills, synthesis skills, etc. Here, the student can contribute positively to enrich knowledge’s group.
With constructivism in universities also new technologies are becoming applied with success. Wikis are not an exception of it, increasing the acceptance and use by students not always linked with computer science [8].

Wikis contributes to make strong the collaborative working between them, too. They allow teachers to introduce the advantages of distance learning in classroom learning [9,10].

1.3 Problem-Based Learning

Another learning system that suggests the increase of collaborative working was PBL (Problem Based Learning). It was a method based on the utilization of problems to acquire and integration of new concepts [11]. Although in its beginning was used for United States [12] and Canada’s medicine courses[13], in present PBL was extended to other different disciplines and topics[14,15].

PBL system of learning and teaching has several goals In example, the development of an attitude and critical judge, team work and independent reasoning and study habit [16]. It tries student identification of its learning needs [17]. That methodology creates a different skills acquisition way from teachers to student direct and passive transmission.

Today there are some Mexican universities as ITESM (Monterrey Superior Education Technological Institute [18]) that already adapted their courses to this teaching system. In where student acceptance was particular good, and self-transformation of knowledge was achieved.

2. - WIKIS ON EDUCATION

To a better understanding of the wikis communities of users is necessary to define the virtual communities' concept [19]. They are online networks of people and public discussion groups. In such communities was feasible the transformation from virtual to learning virtual ones. Hagel and Armstrong [20] remark that the focus must be on users that exchange knowledge.

Ward Cunningham [21] developed wikis as websites to add, to remove, or otherwise to edit all their contents, very quickly and easily.[22] .Such are stimulating characteristics for education. In present time many universities use wikis created by students. Its grows is so strong that Doebli compares it with a virus' propagation [23]

The Wiki has shown their best advantages (as accessibility, immediacy and memory [24]) where users write, edit and enrich contents interacting at the same time with other Wiki users. There are additionally a study that recorded the time employed by students to do this assignments when using wikis [25]. It described an increased efficiency in organization and communication of collaboratively developed pieces of information.

Another author, Schartwz, talked in his investigation over educative wikis [26] about the importance of establish a good criteria in group and individual work to achieve goal's group. In this proposal of group work supported by wikis good criteria is important as well.

3. - MARKETING ANALYSIS

Web metrics are well document ways to reflecting user behaviour in a website [27]. In present a lot of web sites has them and the frequency of visits of a web portal is an indicator of their Internet's presence [28]. On the last years tools as Coremetrics [29], Web Side Story [30] or Click Tracks [31] are examples that are capable to accomplish that task.

The study of users' characteristics was interesting too. The determination if a web page pleased people was considered in other studies. Garcia de León mention the lack of value of some links and contents in web pages as a form to determine the quality of it [32].

Although contents where facilitated to students, on this course, the teacher tried to see all the time the activities developed by students. These kinds of tools help to achieve that task, because they provide to teachers with a source of up-to-time statistical data of assignments evolution.

Google analytics [33] was the tool choose to get the data on this time, because it was free and easy to use. This tool use JavaScript to load the data of the client side in the server. The teacher just has to connect to the webpage of the tool to export the data in an XML format that allow its processing. The system gives the feedback that will be required to understand the groups of students and the classroom as a hole.

4. METHODOLOGY

The methodology chose to do this experiment was the kind of proof-case. It was supported by logging all the information generated by the student's activities in the computer software employed. More than samples, all the log information was collected and processed. It was feasible because the new possibilities that internet nowadays software gives. Proof of concept was done in a first year programming introductory course in which students use the new learning method.

The student's group had a very strong variation from computer's knowledge awareness point of view. Except by the supposed interest in Computer Science by the students of a first year course, no other special difference was found in the knowledge awareness of it. Students had no previous knowledge of the topics to a medium level of it. The groups of students were mainly men in an 80% and from Asturias in a 95%.

After this short description of the experiments methodology, the description of the method employed it's a must.

Learning methodology employed was a variation from Roberto Carballo's work. For international readers, it has a lot of PBL based on groups and scientific method. It was explained in the previous state's of the art description. The main difference with it was the use of a Wiki to support “groups memory”. All the work done in groups using the scientific method was reported to a Wiki. When the groups work they had to write their results in a Wiki.

Periodically, teachers go to groups’ wikis and start their evaluation process using the Wiki categories. This categories where wrote once and use many times. After a Wiki article was categorized the students look to the category's description to see what it’s their error and try to correct them. Remarkably self-learning was part of this process by the way of auto-evaluation [34]. Two main categories were also used to give a general indicator to students’ performance and guide their learning (“Need to improve” and “Good progress”).

Previous to course start, teachers establish a learning facilitation plan to help students learning. More than a passive presentations the facilitation plan tried to show to students where is the door and let them cross that door session after session. This plan was also public to students since the first day.

Another important point in our methodology was the chose of MediaWiki as our CMS. It is an open platform, well tested (against million of users) with no licences cost and with a strongly simple interface. All this characteristics allows students to “get the way” easily. And allow teachers to have a cheap CMS and easy to maintain tool that accomplish the resources' limitation environment that we had.

The data obtained from the CMS, and also integrated with the course web page where processed by an Internet's statistics aggregator and marketing tool. This innovative use of the tool is also part of the success because it allows having real-time easy to process data from the experiment. It allows to visualized information from the enormous amount of information generated in the process. In result's section some screen shots of the tool will be showed. Real-time information about our experiment was possible by this marketing aggregation tools when combined with online collaborative tools.

5. RESULTS

Since the course is not officially complete, the first’s results were found already. The Wiki logs shows a complete process done, with students getting the concept of the method and working in group learning in the expected way. Learn to programming is not easy, but results are showing better behaviour than with the previous methodologies. Again, real-time data allows doing the work easily (for science shake).

The next illustration shows the aggregation of the total activities registered by our tools. It's important to notice that the “Monday, Tuesday, Wednesday’s patterns” that appears are linked with classroom timetable. The “online Wiki activity” was decreasing by time (as assistance to classrooms) lesser than the previous years.

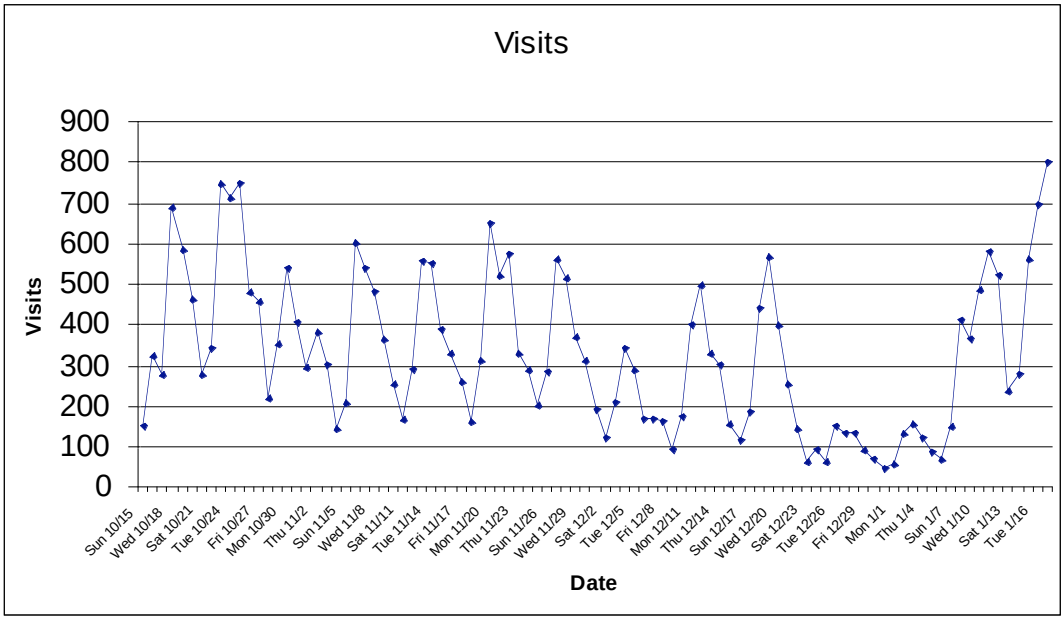

Fig. 1. Visits over weeks days

Also an important analysis over data is that much more students look at “Good progress” category (750) than to “Need to improve” (500) one, furthermore, the need to consider that it possible to have indications of student's work with the content performance of his personal Wiki page.

The assistance annotations from this year reflect that around three times more students go to classrooms on a regular basis. This is a really good rate for Spanish university.

On the benefits found, increase of quality of works, reducing administrative work per student, increased motivation, no cheating (quite enormous difference from previous years), more students on classrooms, getting transversal competences, increasing teachers performance and teaching learning were noticed.

A motivation increase was noticed by teachers, but it was also a measurable by the absence of cheating presence and in the oral presentation made by students.

Cheating was a serious problem last years. In our college and in surrounding ones cheating is quite frequent. In a 200 student group it's not possible to individualize the assignments with the traditional method. But with this new methodology was easy because it help to do it. The competitive dynamics and cooperative efforts do the rest.

A learning contract was given to students at the course start, and the presence of the groups help students to assist to classes. Group work helps people to learn, and also motivate them to go to classrooms. It was a really important indicator concept’s success. One hundred and thirty nine students of a total of one hundred and fifty continue assisting to classrooms in the ninth session (around three times more than previous years).

The group methodology gives students the opportunity to learn team work, oral presentations and scientific search method. All of this are transversal competences that will support their careers and that were also included with the Programming introductory course material.

Students are not the only one that learn using this methodology, also teachers learn. As teachers facilitates learning, groups and the 4x4 groups (groups of groups) discover knowledge linked with the topics, sometimes, this knowledge is so fresh that the teacher already ignore it, or because is lateral to the topic, and not a requirement to teaching. In both cases, teachers learn and as students their degree of motivation increases.

Cooperative team working is part of all of this; learn how to cooperate is as important as learn how to compete in nowadays life. It's a transversal skill that every student should experience over the course.

Learn some of the tools that will allow the cooperation using internet is also positive, and students will have a tool that let them communicate and learn over the years.
These process of categorization allows also to create automatically the “Good progress’s” students list and “Need to improve’s” students list, making by an order of magnitude more productive the teachers' work.

Also on the cons side, the hard start, the less contact with students if not proactive searched, technological expensive and runs better with good team work alumni were found.

This way to help students to learn is based on a good preparation of the class so the first’s weeks are crucial and produce an extra work of preparation for teachers.

Another singularity of this method is that you could loose contact with students, because the group replaces some of the work usually made by the teacher. Anyway, some kind of links with students should be preserve pro actively, trying to reach them in practice sessions and by teacher’s initiative.

Also important, not to forget, that in the hardly ubiquitous computerized society, this is an expensive method that requires one computer per student and a connection over the internet. Also in consideration should be that the CMS and other media should be accounted as a cost.

In next lines team work will be considered. The methodology really runs much better when students came with good team work background. Students were not able all the time to get these skills from their previous personal learning background.

6. CONCLUSIONS

The experiment was considered a positive one, because Wiki appears as a good supporting tool to Carballo’s method. Some skills as digital interaction and digital content production were gained by students as well.

Students started with a little period of confusion with the new methodology and working form. Afterwards they get more motivation and they become more confident to get the general and group learning goals.

European Educational Space could be easily developed with this new methodology. Spanish universities had very large groups of students (more than one-hundred people) and how to overcome that problem is what the methodology tries to answer.

Wikis make possible to take advantage of knowledge sharing between group members over Internet. Carballo’s methodology does the same with the classroom groups. Members’ knowledge level will balance over time by these two ways. An example of this was when students share their group knowledge by links in their group Wiki page.

Further works should be about utilization of the method in business environment. Clients and entrepreneurs can get a good environment in knowledge sharing and selling with courses developed as commented. Improved evaluation of products and services can be developed as a group work supported by wikis.

Semantic wikis as CMS should be considered as well. Benefits from web semantics are well documented, and perhaps the additional information obtained by semantics will be of help for the learning process. One clear benefit will be having a better way to search with or without keywords.

Another interesting area to explore is the introduction of mobiles to support the team work. Perhaps mobiles could be used as a tool to increase learning and also as a way to produce group logs with speech recognition mobile technologies.
Limits of the method still have to be tested. How many students could work together with this method? How are the minimum? And which are the minimal technological environment required to success on the learning?

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