"Writing documents collaboratively in Higher education using Traditional *vs.* Wiki methodology (II): **QUANTITATIVE** results from a 2-year project study"

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Three keywords

Group collaboration, Wiki, Cooperative learning.

Summary of the experience

If the first part of the results from the recent projects in innovation teaching using Wiki methodology for doing group assignments in university degrees showed the qualitative results (De Pedro et al. 2006), this second part focuses more on the quantitative results. Data came from three sources: (a) individual surveys to students using either Traditional or Wiki methodology, including closed questions (1 to 5), (b) a table where they auto-recorded the time invested per week and per type of tasks to complete the group assignment, and (c) their academic marks in the group assignments, evaluated with common criteria for both methodologies. Conclusions from the results obtained stated five main ideas: (1) Wiki methodology in big groups - 15 students - showed a clear enhancement in quality (higher marks) with less overall time devoted to finish the work; (2) Results for smaller groups were not clear, and performance using Wiki methodology seemed to depend on other factors; (3) Students using Wiki methodology devoted less time than the ones using traditional methodology in the items: "writing the work", "exchanging files and other material", and in some cases, in "structuring" and "homogenization of the style, markup, and content" of the work, as well as in "meetings in person"; (4) Students using Wiki methodology were more satisfied with the methodology for writing documents collaboratively than the ones with traditional methodology; and (5) It is important that students who have to use Wiki methodology could previously receive a specific course to get used to Wiki methodology (no only to Wiki technology) through a slow, gradual and comfortable way, in order to extract the maximum profit out of their work whenever they have to use it at production level.

i. Objectives

This communication is the second part of the one entitled "Writing documents collaboratively in Higher education using Traditional vs. Wiki methodology (I): QUALITATIVE results from a 2-year project study" (from now onwards, called as “the first part”, De Pedro et al. 2006). This one focuses more on the quantitative results obtained in the frame of the two projects cited there (UniWiki – 2003MQD00167, and UniWiki-Redice 2005ICE-UB).

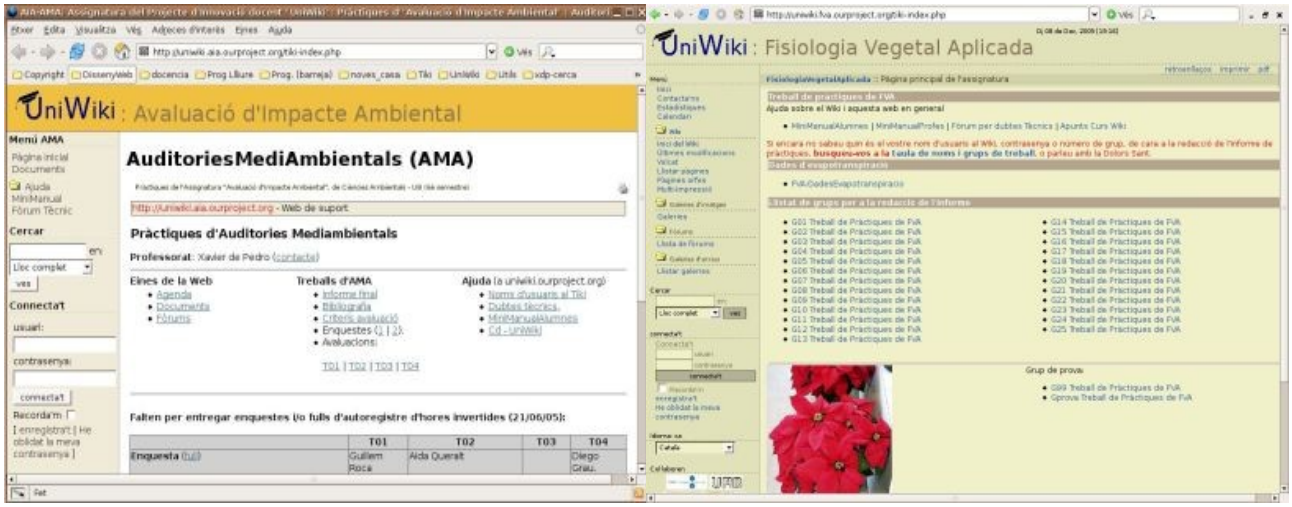
We wanted to know if Wiki methodology reduced the need to use some other ways of distant communication, if it reduced typical organizational problems at doing group assignments, if students obtained better yield of the time invested, and also the degree of satisfaction that students obtained using each methodology. Moreover, we wanted to know if Wiki methodology allowed reducing the time invested onto some tasks commonly needed to complete the group work.

ii. Description of the work

Introduction

The results shown here are framed within the same context as reported in the previous communication (De Pedro et al. 2006).

Several TikiWiki sites were configured (Figure 1), one for each subject participating in the UniWiki project, to allow single cooperative virtual communities for each subject (one per subject, Table 1).



http://uniwiki.aia.ourproject.org http://uniwiki.fva.ourproject.org

http://uniwiki.eaub.ourproject.org http://uniwiki.sima.ourproject.org

Figure 1. Some of the TikiWiki sites configured for the subjects participating in UniWiki project. Layout of content can be easily modified or adapted to the context or needs of each subject, even if minor changes were introduced among the different subjects, in our case

Each TikiWiki collaborative portal site was later on manually configured to host different work groups, since AulaWiki module to automatically allow and configure work spaces was not yet developed by then (De Pedro & Reyes 2006). Each work group had manually created by the teacher their own private forum, file galleries, Wiki pages, ... as many TikiWiki resources, and as private or

public as needed for the specific case of configuration needed for each subject.

Methodology

We defined in “the first part” what we called Traditional methodology and Wiki methodology (De Pedro et al., 2006), and we use the same terminology here.

Subject	Code	Degree and cycle	Cycle	Students	Type of group assignment
Applied Ecology (Bio-UB)	EAUB	Biology	2nd	24	Synthesis and critical thinking
Applied Ecology (CCAA-UAB)	EAUAB	Environmental Sciences	1st	60	Synthesis and critical thinking
Applied Vegetal Physiology	FVA	Biology	2nd	69	Writing a report from practical classes
Evaluation of Environmental Impact	AIA	Environmental Sciences	2nd	60	Report writing; synthesis and critical thinking
Functional Ecology	EF	Environmental Sciences	1st	50	Information gathering and synthesis
Health and Environment	SIMA	Nursery	1st	25	Information gathering and synthesis
Metabolism Regulation	RM	Biology	1st	300	Writing a report from practical classes
MultiMedia	MM	Documentation	1st-2nd	80	Writing a report from practical classes

Table 1. Subjects, degrees and cycles, students, type of work

Data shown here (Table 2) were collected through individual surveys (Annex 1) with closed questions (answers ranging from "1" - Maximum Disagreement - to "5" - Maximum Agreement -, being "NR" the "No Response" cases; equal to "NS/NC" in Catalan and Spanish), plus individual sheet per student containing a table to allow them to record the time they invested to fulfill their tasks in the group work ("self-recording table", from now onwards; Annex 2). Students had to hand in the sheets to their teachers at the end of the term inside a closed envelope labeled with their name on it, and they were not opened until the grading of the group work was completely finished.

Subject	Surveys					Self-recording tables of time invested				
Code	Wiki	Trad.	?	Total collected	Total students	Wiki	Trad.	?	Total collected	Total students
AIA	26	33		59	60	30	27		57	60
EAUAB	11	11		22	60	11	11		22	60
EAUB	7	13		20	24	7	13		20	24
EF	39	0		39	60	39			39	60
FVA	2	11	2	15	69	2	6	2	10	69
MM	13	7		20	32				20	32
RM				32	300	26	6		32	300
SIMA	9	14		23	25	9	14		23	25

Table 2. Surveys and self-recording tables handed in, for each work methodology and subject.

The last set of data came from the academic marks they obtained from the grading of their group work, which was performed without taking into account the type of methodology deployed by students (same criteria for grading the final document made in group through any of the two methodologies).

Some results are plotted as bar graphs, with error bars showing standard error of the mean (calculated as standard deviation of the mean divided by the square root of the number of cases).

iii. Results and Conclusions

Results

There where a total of 229 surveys and 223 self-recording tables collected (divided in methodologies and subjects in Table 1 in the accompanying communication; De Pedro, 2006).

Among the items answered in the collected surveys, some results are shown specifically for the subject "*Evaluation of Environmental Impact, course 2004-2005*" ("AIA 0405") in detail, from which the more extensive and balanced data-set was gathered (circa 30 students with Traditional methodology *versus* circa 30 with Wiki methodology).

Methodological issues:

Students with Wiki methodology did not use as much the more common ways of communication (phone, chat or instant messaging, e-mail) and of exchange of documents (floppies, USB-drives, ...), but they employed more the Wiki technology. Moreover, meetings in person were reduced in the groups of students that followed Wiki methodology.

Organizational issues

In general, first-cycle students showed less difficulties to hold meetings during the week than those of second cycle. This is totally justifiable due to the bigger dispersion in subjects of last-years students, in spite of the case that subject was compulsory or optional in the degree. The difficulties of internal organization inside groups were very heterogeneous, and they did not seem to be tied to the work methodology but more to the characteristics of each group of students.

Marks and time yield

In very big work groups (AIA, 15 students for group) there is a clear advantage in the yield of the time invested for the students that worked using Wiki methodology respect to the ones using Traditional, with more frequent occurrence of high marks, for the same or less time invested (Figure 2).

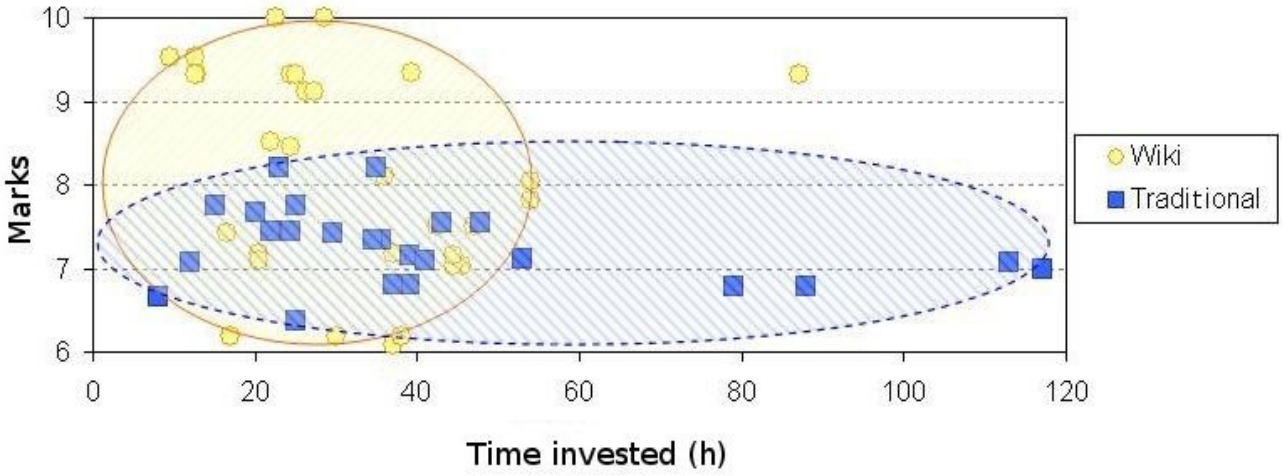


Figure 2. Yield: marks versus time invested to complete the group work. Case of subject "AIA 0405". Common criteria for grading were used.

In smaller groups (2-4 pupils for group, generally), where it is not essential to use special methodologies of work in group, there are not evident differences, and the success in the use of the tool might be more related with other factors:

- students were appropriately motivated by teachers
- students controlled, previously to their use in class for production, the functioning of the new tool that they were going to use. This would imply that all students would have joined necessarily some suitable specific guided formation on the Wiki methodology, and on the correct use of the Wiki technology
- students had difficulties to meet in person (all the members of the work group), with as much frequency that they felt it was necessary for them
- students didn't refine at the end the writing, markup, grammar and spell checking, removing duplicities of information, synthesizing again, if needed, etc.

Student satisfaction

There are some differences in the perception of the satisfaction about the method between the pupils of first cycle and those of second cycle. On the one hand, students of first cycle compulsory subjects, if they can meet every day in class and that are more usual to the multimedia technologies (Functional Ecology), then they need more tutelage and direction of the work, and they do not seem to appreciate the advantages of the methodology so much. The students of optional subjects of the first cycle that can not meet every day in class (because most of them work besides studying, as it happens in SIMA "Health and Environment" from Nursery degree), they do appraise it indeed more positively than with the traditional method.

Students of second cycle feel satisfied and recognize the advantages of the Wiki methodology, especially regarding the subject AIA and EAUB. In some specific cases, however, they did not use the tool due to technological handicaps and because they were not used to this work methodology.

"AIA 0405" specific case study

Students that used Wiki methodology showed a higher satisfaction degree for the tool than the students that didn't use it but knew about it because their colleagues told them the details (Figure 3), and they showed a little less satisfaction regarding the Internet connection (Figure 4). This could imply that even if some colleagues tell a student about some advantages and satisfaction using Wiki methodology, they only become satisfied with it when they try it themselves and have a good experience with it (and not just due to comments from the teacher or their colleagues about it).

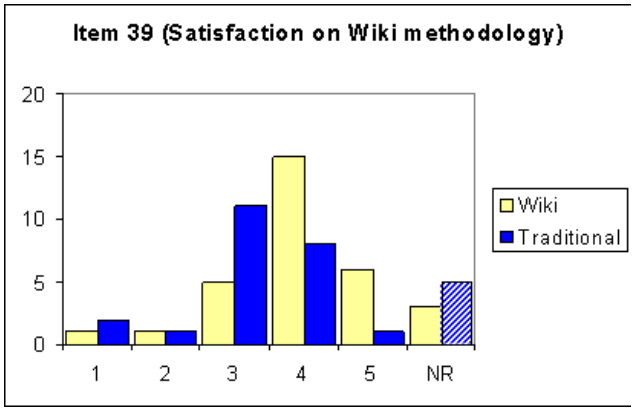


Figure 3. Satisfaction of students about Wiki methodology. Case of subject "AIA 0405

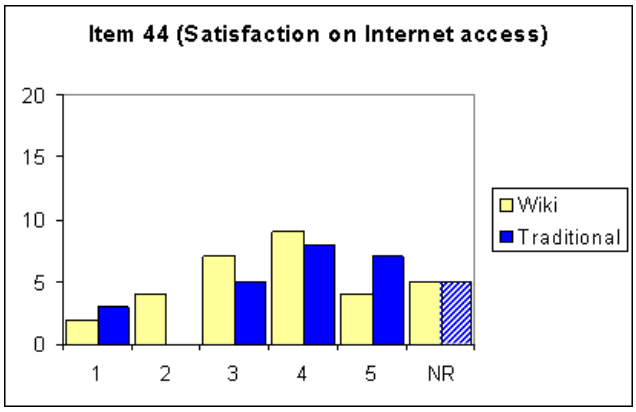


Figure 4. Satisfaction of students regarding the Internet connection. Case of subject "AIA 0405

Students that worked with Wiki thought the the methodology they used served them to increase their final quality in the work and document, and the ones who used traditional methodology didn't think that their work methodology helped them as much as their colleagues with Wiki methodology thought (Figure 5).

Likewise, all students thought that Wiki methodology facilitated that they could interact with the parts of the document led by other members of the work group, and that the other ones could interact with theirs. This can be deduced from that students with Wiki methodology had the feeling that it allowed them to improve their interaction (Figure 6), and the others declared that traditional methodology, with which they worked, didn't facilitate this expected (and pursued by lecturers as a goal from the subject objectives) interaction among students.

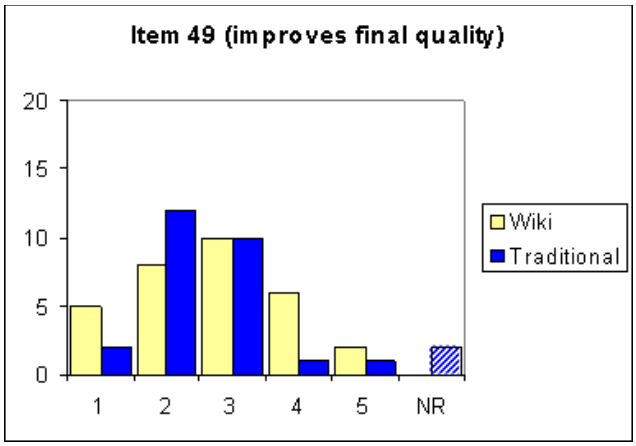


Figure 5. Perception from students that the methodology they used improved final quality of the work. Case of subject "AIA 0405"

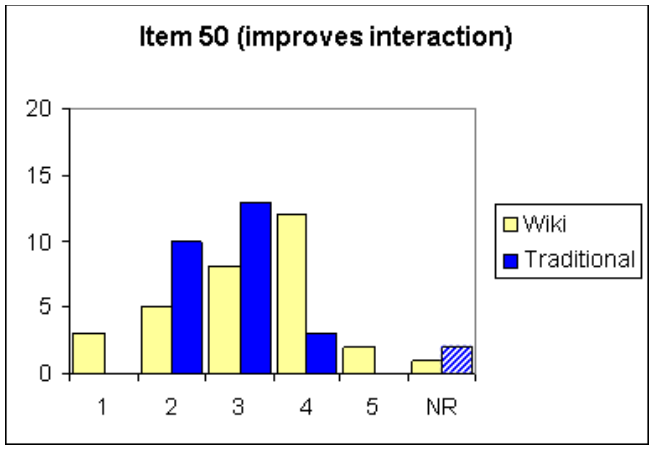


Figure 6. Perception from students that the methodology they used improved interaction among the members of the work group. Case of subject "AIA 0405"

Time invested by items

It could be analyzed only in four subjects (AIA-0304, AIA-0405, EAUB and SIMA). Some of the items were specific of each subject and their comparison has no real meaning in practice for all subjects, since the survey, common to all, contained questions about items that were not used at all in some subjects, but were in others.

Thus, we highlight (in bold) some items out of the 16 proposed (Annex 2), due to its interest for the global comparison:

- T1 = Choosing the topic
- T2 = Searching information
- **T3 = Structuring the document information,**
- **T4 = Writing of the work,**
- T5 = Including images in the document
- **T6 = Process of giving homogeneity to style and content,**
- T7 = Final markup to the document, in web page
- **T8 = Final markup of the document, in paper,**
- T9 = Preparing oral presentation
- **T10 = Exchange of files and materials,**
- T11 = visits-interviews with topic experts
- **T12 = Journeys,**
- T13 = Tutorship in person with teacher/s
- T14 = Tutorship by telematic means with teacher/s
- **T15 = Meetings in person of the members of the group**, and
- **T16 = Telematic communication among the members of the group: phone, Wiki, e-mail, chat, etc.**

The time devoted to structuring the work (item T3) is not necessarily inferior using Wiki methodology respect to traditional methodology, even though there was an exception (AIA 0405).

The time devoted to writing the work (item T4) has been inferior with Wiki methodology. This is a positive result of support to the Wiki tool and methodology.

Another aspect that we wanted to explore was if the Wiki methodology favored the process of giving homogeneity to the markup, style and content of the work (item T6). Students from AIA and SIMA subjects that worked with Wiki methodology dedicated less time to giving homogeneity than those with traditional methodology, except for the EAUB subject, having in all cases similar presentation quality. It remains unclear if these differences in results are only a consequence of the type of methodology or a consequence of the different interest and commitment of each working group in the matter of work.

In all experiences, Wiki methodology saved, in average for the whole group, about 50% of the time invested on final markup of the work (item T8), compared to students working with traditional methodology. But the teaching staff felt that the single students that made this markup did not have to invest less time through Wiki methodology than the ones with traditional methodology. Suitable data was not collected to verify this hypothesis.

In general, Wiki methodology enables a time saving in the exchange of files and materials (item T10) of about 50%.

Regarding the time dedicated to journeys (T12), even though it seemed that the Wiki methodology saved time in general, results were not conclusive since the time for journeys was tied to the specific characteristics of each work (there were works where longer journeys were required for interviewing experts, and on this matter, Wiki methodology was not able to bring savings).

The time devoted to meetings in person (T15) was in global reduced with Wiki methodology in a clear way, even though in a single case the results were inverted (EAUB).

"AIA 0405" specific case study

On the one hand, students that used Wiki methodology invested less time in (Figure 7):

- choosing the topic (item 1 or T1),
- structuring the document information (T3),
- homogenization of the single discourse of the document (T6),
- exchange of files and other material (T10), and
- meeting in person of the work group members (T15).

On the other hand, Wiki methodology meant a major inversion in time, respect to traditional methodology, in:

- including images in the document (T5, although there were very little students that included images in the document, in both work methodologies).
  This result was expected since we there was a misconfiguration of TikiWiki in our specific hosting provider, which was solved long ago, but after the experiences were carried with students in the framework of the project reported here (course 2004-2005). By then, students had to upload images not directly to the single page were they were going to use them (as explained in De Pedro 2006, which is probably less time consuming than including them in MS Word documents), but they had to upload them to "Image Galleries" feature, search them there, copy their link, and go back to the text document to include them there by manually adding some Wiki code to reference that image in that position. This longer and more manual process obviously meant longer times to include images, and also some disagreement from students (and teachers), of course, which had to learn the process to include them in the Wiki page already. Many students didn't include images in the Wiki pages, but waited to have the final OpenOffice Writer or MS Word document to include them there, at that final stage of the group work, just before printing it in paper.

Tutorship (T13, T14) is not commented here but in a next section (below).

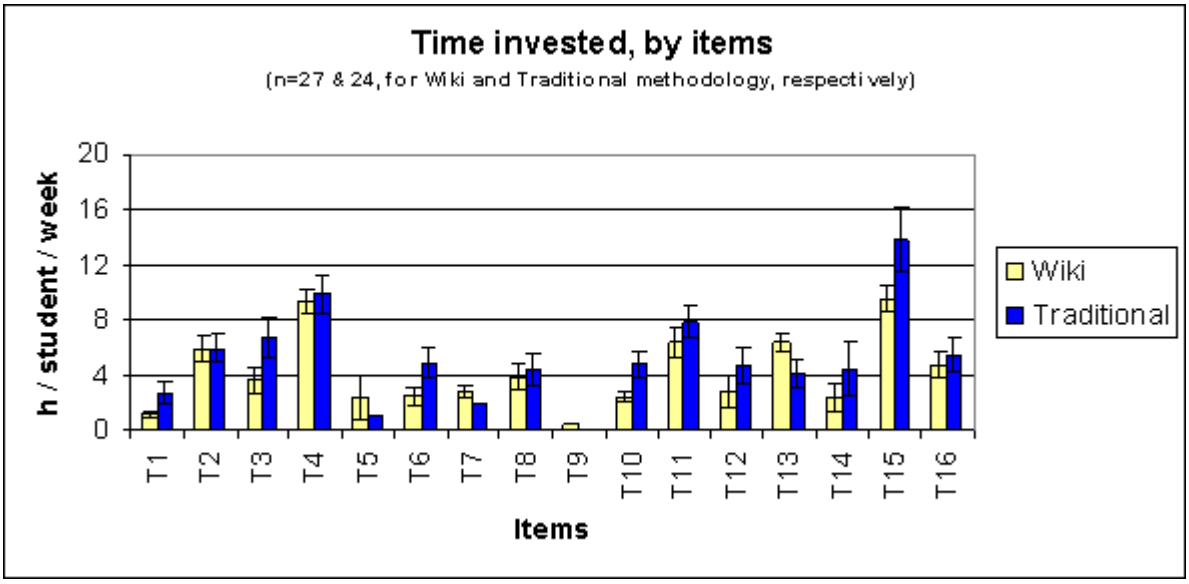


Figure 7. Time invested by items. Case of subject "AIA 045"

Tutorship

Students who had worked with Wiki methodology invested more hours of tutorship in person in all cases with data ("AIA0405" and "SIMA"; both with the same teacher) than their colleagues with traditional methodology. They had to do some extra meetings inside class hours for showing them the basic functioning of the Wiki technology and solving doubts, since only between 5 % and 10 % of the those students had done the specific extra course (convertible as "free choice" credits) on Wiki technology offered. Looking at data from these specific students who attended the extra course, the time they invested in tutorship in person was much lower than the average (data not shown).

"AIA 0405" specific case study

Time dedicated to tutorship in person was higher in students with Wiki methodology (Figure 8), whereas it was the opposite when tutorship was requested through telematic means (e-mail. forums, internal Tiki messaging, etc.) was much lower in students with Wiki methodology than in those who used Traditional methodology, for the most relevant case ("AIA 0405"), where students knew already e-mail, web browsing, searching information in computers, etc (Figure 9).

The different tutorship in person might be referred to their biggest need to consult the teacher the topics what are bring written in the Wiki or discussed in the electronic forums of the subject. Whereas students from traditional methodology would already speak more in person among the different members of their work group, and therefore, they would need less to go to the teacher to consult basic things.

On the other hand, the pupils who worked with Wiki methodology would have needed less time of tutorship through telematic means, since the Wiki would already allow to ask, to comment or even to discuss them all about specific things of their work or document without having to meet in person.

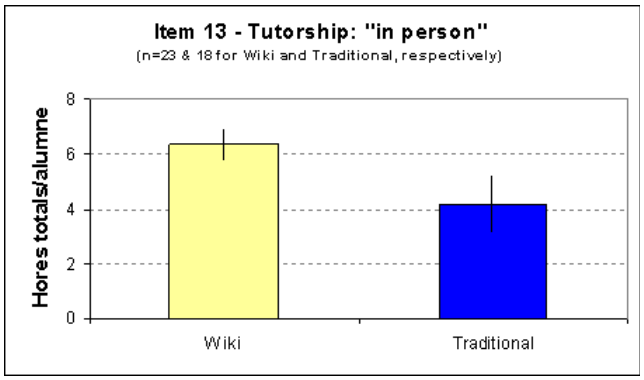


Figure 8. Time invested in "in person" tutorship. Case of subject "AIA 0405"

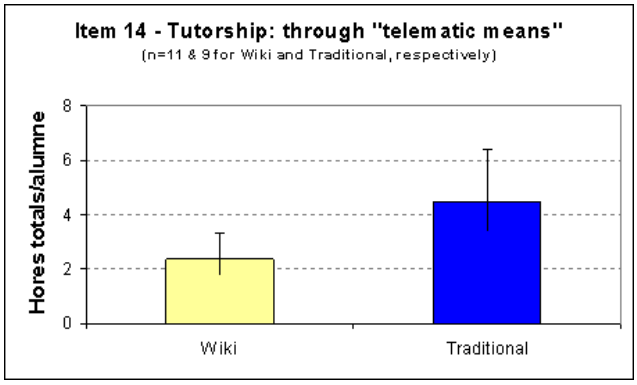


Figure 9. Time invested in tutorship through telematic means. Case of subject "AIA 045"

Not all students who worked with Wiki methodology were satisfied with the contributed support by their teacher to do the work (in the frame of the assignment in the practical classes of AIA subject), whereas those who used the Traditional methodology they did remained very satisfied (Figure 10). It can be deduced from here that, being the tasks and intended support from the teacher the same towards all groups of students (regardless of the work methodology they used), the difference had to be specifically on the work methodology based on Wiki. It has to be stated, also, that only four out of 31 students who used the Wiki joined previously the extraordinary course of 10 hours (convertible as "free choice" credits) on collaborative writing using Wiki. The rest received little more than two hours of formation / training in Wiki usage, distributed along the first two meetings in person within the practical classes of the subject. This way, it would be expected as logical that students who worked with Wiki methodology should remain with the sensation that it would have been more necessary for them to have had increased methodological support (because the support about the specific content from AIA subject was them same for all groups of students).

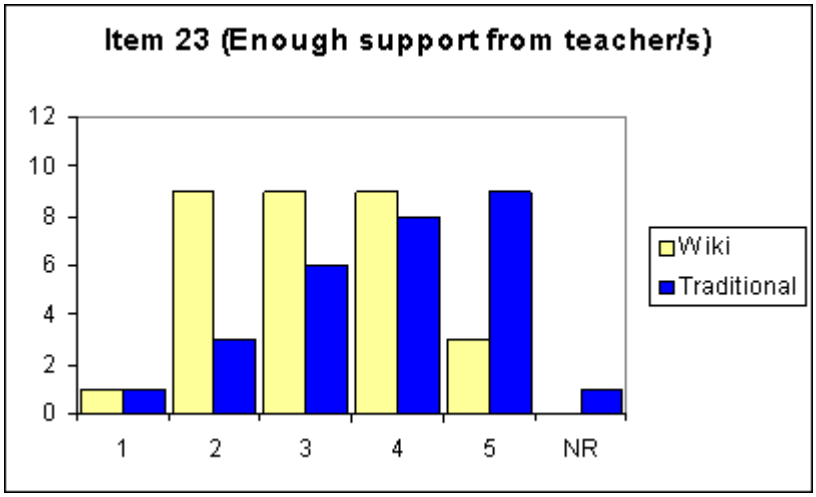


Figure 10. Support received by Teacher/s. Case of subject "AIA 045"

Consequently, it becomes important that fact that, students who have to use Wiki methodology, could previously receive a specific course to get used to Wiki methodology (no only to Wiki technology) through a slow, gradual and comfortable way. This way, they will be able to extract the maximum profit out of their work with the minimum disorientation due to the collaborative work methodology based on Wiki, whenever they have to use it at production level in real situations (other subjects at university or in their professional jobs out of university later on).

Conclusions

- Wiki methodology in big groups (15 students) showed a clear enhancement in quality (higher marks) with less overall time devoted to finish the work.

- Results for smaller groups were not clear, and performance using Wiki methodology seems to depend on other factors, which might vary among:
  - □ previous training using the Wiki technology,
  - □ motivation of the teacher to convince the students to give the new methodology a try
  - □ difficulties to attend meeting in person to discuss or write together the document.

- Students using Wiki methodology devoted less time than the ones using traditional methodology in the items: "writing the work", "exchanging files and other material", and in some cases, in "structuring" and "homogenization of the style, markup, and content" of the work, as well as in "meetings in person".

- Students using Wiki methodology were more satisfied with the methodology for writing documents collaboratively than the ones with traditional methodology. Those results came from the subject where bigger and more balanced data sets could be gathered to analyze answers from their surveys (AIA 0405).

- It is important that students who have to use Wiki methodology could previously receive a specific course to get used to Wiki methodology (no only to Wiki technology) through a slow, gradual and comfortable way, in order to extract the maximum profit out of their work whenever they have to use it at production level.

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3. Ourproject.org server and Vicente (vjrj) in particular, one of its administrators.
4. Library of Biology Faculty (UB)
5. Tikiwiki.org community, and Sylvie Greverend in special, for her kind and highly skilled technical support with coding and debugging features used by UniWiki project.

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v. Annexes

Annex 1. "Personal survey about the work in group" (4 pages).

Annex 2. "Self-recording table of time invested" (1 page)

PERSONAL SURVEY ABOUT THE WORK IN GROUP UniWiki.ourproject.org

The objective of this survey is gathering information that can be of great help for the improvement of this course, in future editions. Please, indicate your degree in agreement, according to the scale of the right, with each one of the relative affirmations to this course, and leave blank answer if the affirmation is not outstanding or you don't understand the question. Don't dedicate a lot of time to decide each answer. Your first reaction is probably the best. *There are questions where it may have special interest to enlarge the answer; in these cases you can do it in each area of comments, including the number of the question that it refers to.*	***A lot of disagreement***	***In disagreement***	***Neutral***	***In agreement***	***A lot of agreement***

(when finished, hand it in to the teacher, inside a closed envelope with your name and surnames on it)

Name: - Surnames: Date: ___/___/___

Subject: Group: Final format (Paper/Web):

Teacher: N. people in the collaborative writing group:

Do you work besides studying? YES/NOT (hours per week, in affirmative case): ____h

PREVIOUS COMPUTER SCIENCE FORMATION

1 In the case of having previously received specific formation (course, specific class, ...) about the computer tools used, indicate the number of hours for each tool, the year and the total duration of the formation (h)

Instant messaging or chat (jabber, msn...): .....h | **E-mail: .....h** | **Forum:.....**h | **Wiki**: .....h
Version or changes control of the document (in Wiki, OOo, Word,...): .....h | **Web folder (WebDAV)**: .....h
Other (specify below) **:**

TECHNICAL ISSUES

2	I have had problems to access to the **Wiki for simultaneous connection** of many users	1	2	3	4	5
3	I have had other technical problems with the **Wiki** *(specify below)*	1	2	3	4	5
4	I have had technical problems with **OpenOffice** *(specify below)*	1	2	3	4	5
5	I have had technical problems with the **Web folder** (WebDAV)	1	2	3	4	5
6	I have had technical problems with the connection to Internet	1	2	3	4	5
7	I have had difficulty to access **computers** where I could work	1	2	3	4	5
8	I have had technical problems with the **e-mail**	1	2	3	4	5
9	I have had **other technical problems** *(enlarge the answer below, if needed)*	1	2	3	4	5

Comments to the questions from 2 to 9 (indicate the number of question that it refers to):

PREVIOUS SKILLS

I have had problems that have affected me in the realization of the work, for absence of enough previous computer knowledge on:

10 computer science in general	1	2	3	4	5
11 e-mail	1	2	3	4	5
12 Office suites - writing texts	1	2	3	4	5
13 Office suites - edition of drawings	1	2	3	4	5
14 Office suites – spreadsheets and making graphs out of scientific data	1	2	3	4	5
15 Office suites – edition of presentations, slides,...	1	2	3	4	5
16 prevention and cleaning of computer viruses	1	2	3	4	5
17 access to Internet	1	2	3	4	5
18 access and search in specialized data bases	1	2	3	4	5
19 other *(enlarge the answer below, if needed)*	1	2	3	4	5

Comments to questions from 10 to 19 (indicate the number of question that it refers to):

ISSUES OF ORGANIZATION INSIDE THE GROUP

20 I have had problems due to difficulty to meet in person with colleagues of my group of work during the week days	1	2	3	4	5
21 I left the city during the weekend and thus it was difficult to meet with class colleagues for making the work	1	2	3	4	5
22 We have had other problems of internal organization in our work group *(enlarge the answer below, if needed)*	1	2	3	4	5

Comments to questions 20, 21 and 22 (indicate the number of question that it refers to):

EDUCATIONAL ISSUES

23 I have had enough support from the teachers in the process of doing the work *(enlarge the answer below, if needed)*	1	2	3	4	5
24 I have had enough support of professional staff with who I had to relate in the process of realization of the work *(enlarge below, if needed)*	1	2	3	4	5

Comments to questions from 23 to 24 (indicate the number of question that it refers to):

METHODOLOGY OF WORK

To interchange information with my class colleagues, in order to write the group document, I have used the following tools:

25 Floppy disk, CD, USB sticks,...	1	2	3	4	5
26 Telephone	1	2	3	4	5
27 Instant messaging or chat (jabber, msn,...)	1	2	3	4	5
28 E-mail	1	2	3	4	5
29 Wiki	1	2	3	4	5
30 Web folder (WebDAV)	1	2	3	4	5
31 Forum	1	2	3	4	5
32 Meetings in person	1	2	3	4	5
33 Control of versions or changes of the document (in Wiki, OOo, Word...)	1	2	3	4	5
34 Other *(specify below)*	1	2	3	4	5

Comments to questions from 25 to 34 (indicate the number of question that it refers to):

SATISFACTION DEGREE WITH THE METHOD OF WORK THAT I USED

I am satisfied with the methods of work that I used in order to make the group document *(enlarge the answer below, if needed)* :

35 Floppy disk, CD, USB sticks,..	1	2	3	4	5
36 Telephone	1	2	3	4	5
37 Instant messaging or chat (jabber, msn,...)	1	2	3	4	5
38 E-mail	1	2	3	4	5
39 Wiki	1	2	3	4	5
40 Web folder (WebDAV)	1	2	3	4	5
41 Forum	1	2	3	4	5
42 Meetings in person	1	2	3	4	5
43 Control of versions or changes of the document (in Wiki, OOo, Word...)	1	2	3	4	5
44 Access to Internet in general	1	2	3	4	5
45 I didn't need to get out of home for making the work	1	2	3	4	5
46 Availability to work "on-line"	1	2	3	4	5
47 Availability to work in person	1	2	3	4	5
48 Other *(specify below)*	1	2	3	4	5

Comments to questions from 35 to 48 (indicate the number of question that it refers to):

I believe that, respect to other work or assignments done in group previously, the method of work served for *(enlarge the answer at the end, if needed)*

49	improving the final quality of the work	1	2	3	4	5
50	improving my interaction with the parts of the work led by other members of the group, and upside down, of the other ones with the parts led by me.	1	2	3	4	5

Comments to questions 49 and 50 (indicate the number of question that it refers to):

51 **other comments** *(add them below or in a blank sheet aside of this one)***.**

SELF-RECORDING TABLE OF TIME INVESTED

UniWiki.ourproject.org

Name: **Surnames:** **Date: ___/___/___**
Subject: **Group:** **Final format (Paper/Web):**
Teacher: **N. of people in the group of collaborative writing:**
Do you work besides studying? YES / NOT (hours per week, in case yes): ____h

TEMPORAL DEDICATION IN NON-PRESENT ACTIVITIES AND IN TUTORSHIP OF THE WORK IN GROUP (unit of effort: hours)

(when finished, had it in to the teacher,inside a closed envelope with your name and surnames on it)

	Weeks									
Items	1	2	3	4	5	6	7	8	9	10
Dates(dd/mm-dd/mm)										
Decision of the topic										
Search of information(libraries, webs,...)										
Structuring the document information										
Writing documents										
Inclusion of images in the document										
Homogenization of the single discourse of the document										
Final format of the document in Web page										
Final format of the document in paper										
Preparing an oral presentation										
Exchange of files and other material										
Visits – Interviews with experts of the topic										
Journeys										
Tutorship in person with the teacher										
Tutorship with teacher through telematic means										
Meetings in person of the group members										
Distant communication among the group members (phone, Wiki, e-mail, chat, ...)										