

**LEARNING ABOUT SOCIAL ACCOUNTING IN THE KNOWLEDGE SOCIETY: A  
WIKI-WEBQUEST**

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# **LEARNING ABOUT SOCIAL ACCOUNTING IN THE KNOWLEDGE SOCIETY: A WIKI-WEBQUEST**

## **1. INTRODUCTION**

Within a political and economic context, the creation of the European Higher Education Area could be of increasing greater importance as part of the process of European integration. In this sense, in order to attain the ultimate objective of European integration, different measures have gradually been incorporated that have enabled, first, the free circulation of assets and, subsequently, the free circulation of human resources, capital and services among the Member States. However, as indicated by Bache (2006), the convergence of the Member States has also required changes to structures and processes, changes in the ideas and values that enable the development of a European citizenship and the social construction of the European identity.

Therefore, in this process of changes to national paradigms, education has acquired a crucial role, as can be inferred from Masschelein and Simons (2002). To this end, in 1985, the European Commission initially promoted cooperation between the Member States on education matters, creating different educational programmes: Comett, Erasmus, Lenga, Tempos, Leonardo da Vinci and Socrates. In 1999, 29 countries, including Spain, signed the Bologna Declaration for the creation in 2010 of a European Higher Education Area, in order to increase competitiveness in European Higher Education. In doing so, the following objectives were established: (1) the creation of a system of comparable degrees between countries based on two levels, graduate and postgraduate; (2) a common ECTS credit system with continuing education activities; (3) a European dimension for the guarantee of quality that incorporates comparable methods and criteria; and (4) the promotion of the mobility of students, researchers and lecturers.

Through this initiative, the university is configured, as defined by Barnett (1994), as an institution of society that is closely linked to the job market, whose objective is to develop skills and abilities in students to help them cope with a globalised market. Therefore, adaptation to the new European environment requires a change of paradigm in Spanish higher education to promote university as a centre of knowledge creation as opposed to the former

paradigm that conceived university as being a place for transmitting wisdom. This implies major changes to the traditional curriculum. Thus, while until now knowledge and skills were transferred from professor to student, the latter hence acquiring a passive role, in the newly emerging curriculum, students are actively involved in the learning process, which, according to Kolb (1984), Russ (1998), Martinello and Cook (2000) and Lim (2004) (1) favours the generation of ideas, knowledge and skills through the transformation of experience, (2) the resolution of conflicts by adapting theoretical models to the real world through critical reasoning, (3) the development of scientific research skills and (4) the acquisition of autonomous learning skills. To do this, the teacher must develop a set of strategies and techniques to stimulate learning competence and the development of human capital.

In this sense, according to McIntyre and Wolff (1998), Ainley et al (2002) and Garrison and Anderson (2003) web-based environments are considered to be an innovative method that could be of benefit to the teaching, research and learning of students. However, as indicated by Dodge (1995), Laurillard (2002), Zheng (2007) and Allan and Street (2007), Internet offers major opportunities for the distribution and obtainment of information, though this does not guarantee learning *per se*, as it could mean a hindrance in the case of students using the net without any specific objectives for searching and acquiring knowledge. WebQuests emerged as a method for overcoming the difficulties of accessing excessive or irrelevant information (Dodge (1995,1997)).

Dodge (1997) defines a WebQuest as being a guided research activity, in which all or a large amount of the information that students use is obtained from the Internet. WebQuests are designed in order for students to make the most of the time by focusing on using information more than looking for it, and generating new knowledge through critical reasoning on different levels of analysis, synthesis and evaluation, as Dodge (2001) and Richards (2005) suggest. The possibilities offered by the WebQuest model in the development of student skills and abilities has raised interest among professors, who have implanted the method on different educational levels and in different areas (Donovan (2005), Hazari and Johnson (2007), Sautter et al (2000) and Long and Stevens (2004) among others) and also among academics, who have analysed the pedagogical advantages of using said model and the development of its implantation process (Hazari and Johnson (2007), Ainley et al (2002), Kanuka et al (2007), Zheng et al (2007), Allan and Street (2007) and Lim (2004)).

A large number of these studies coincide in affirming that the WebQuest model can (1) promote critical reasoning in students, as the WebQuest activity incorporates elements of reflection to be learned from, making it possible to compare, contrast and synthesise knowledge to construct new understandings; (2) facilitate the application of knowledge, as the proposed activity is developed in a setting that interests the students and is related with the problems that could arise in the real world; and (3) develop collaborative skills during the learning process as they require students to work in groups.

In this sense, different authors such as Johnson and Johnson (1990), Slavin (1992) and Biggs (2003), indicate that collaborative work generates positive effects on the students forming a group. According to Allan and Street (2007) collaborative work promotes student autonomy, making them responsible for carrying out one part of the project, as a contribution to the proposed discussion of the subject once the ideas and results have been pooled together. This, in turn, provides students with greater fluency in the use of economic language and gets them used to working as a team, a work method that has been adopted by a large number of companies to deal with the complex problems that can arise in the kind of dynamic but uncertain environment that is so typical of a globalised economy.

However, according to Harrer et al (2006), a professor that wishes to implant a methodology based on collaborative work is faced by two challenges: controlling the time available to prepare the material and dealing with students' doubts, as well as examining and evaluating students' behaviour within the work group. To cope with this latter difficulty, we propose the use of Wiki technology. Dobrockey (2006) defines the Wiki as a web application that enables the user to create pages and/or edit the content of those that already exist, which favours the exchange and generation of ideas, and therefore, collaborative/cooperative work. The flexibility and ease of use offered by this tool has led to its incorporation in the business world, as shown by Dobrockey (2006), King (2007) and Rahman (2006), as well as its application to education, as can be inferred from Parslow (2005). In this latter case, its implantation enables the professor to observe and revise the changes made and improvements incorporated by each of the students, and also to refine the content of the same by correcting any detected errors. So, Wiki technology is configured as a tool that enables the teacher (1) to follow the evolution of the acquisition and generation of the knowledge of the group and of each of its members and (2) to efficiently evaluate each student in terms of group and

individual work done. Also, from the student's point of view, the use of this application leads to the development of teamwork skills, favouring adaptation to the business environment.

The objective of our paper is to test whether an innovative method of learning such as a wikiwebquest leads business students to achieve results which are significantly different from those derived from traditional methods. So, while exploiting the advantages offered by each model for the way students acquire skills and are evaluated, we will design and implement a WebQuest and a Wiki for the financial accountancy course taught in the first year of the Company Management and Administration Degree at the Universitat Autònoma de Barcelona (UAB). Its aim will for the students (1) to become aware of the importance of financial accountancy and annual accounts as elements of information on the transactions the company makes with its environment, within the context of corporate social responsibility, (2) to know how to interpret and evaluate the information that is provided and (3) to learn to use it to make decisions. An important issue in the project is the inclusion of ethics in the education of our students in relation to accounting. And that is why we have designed a WebQuest based on decisions upon corporate social responsibility. We believe deeply in the importance of including ethical issues in the accounting area education so that students learn to use their moral reasoning in their decision making process. However, we agree with Mele (2005) when he says that the main goal for ethical education in accounting should be to impact on the ethical behaviour of students and not only to provide theories, tools or to solve ethical dilemmas. In our project students will meet with the very relevant social approach of financial accounting information.

The structure of the paper is as follows: first the Spanish regulatory framework for corporate social responsibility is provided. Second we explain the wikiwebquest we have designed. Then data and results are presented and finally we refer to some conclusions, implications and limitations of the paper.

## **2. SPANISH REGULATORY FRAMEWORK**

In the case of Spain, companies are obliged to supply financial information on an annual basis, in the form of annual accounts, i.e. Balance Statement, Profits and Losses Account, and Annual Report<sup>1</sup>, in order to inform both internal and external users.

The creation of the aforementioned accountancy statements is made in consideration of the principles and regulations stipulated in the *Plan General de Contabilidad* (General Accounting Plan - PGC) published by the *Instituto de Contabilidad y Auditoria de Cuentas*. (Institute of Accounting and Account Auditing - ICAC). This entity also publishes compulsory regulations that expand upon certain concepts contained in the PGC. So it was that the aforementioned entity dictated regulations to recognise, evaluate and inform on the environmental aspects of annual accounts through a Resolution of March 25, 2002. So, from that date on, companies have been obliged to report in their annual accounts on any significant information relating to the prevention, reduction and repair of environmental impact derived from their activity.

Some companies, aware of the interest being awakened among society in responsible corporate behaviour now also offer voluntary information by issuing Social Responsibility Reports, Environmental Reports and Sustainability Reports in which they describe their actions and the recognition of the same by Quality Agencies. So, the release of annual accounts along with reports on social, environmental and ethical reports provide the user with an overall image of the company. However, companies may manipulate the social and financial information and avoid mentioning any abuse of employees, environmental damage, tax evasion, unethical behaviour, and other issues that could generate controversy when it comes to investing in a specific company.

So given that the study and analysis of the socially responsible behaviour of companies is a topical issue, and the focus of much debate in the media, and of major interest to society in general and businesses in particular, we are of the same opinion as Nichols and Day (1982) and Nelson and Obremski (1990), in that the proposal of work in this context will arouse students' interest in accountancy in general, encouraging them to actively participate in discussions within their work group. Also, according to Dukerich et al (1990) and Mai-Dalton

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<sup>1</sup> In this work, we have not taken into account the new documents that companies have been obligated to present from January 1, 2008 (*Estado de Cambios Patrimonio Neto o Estado de Flujos de Efectivo* – Statement of Net Financial Changes or Statement of Cash Flows) because the annual accounts the students will be working with relate to 2007 or previous years.

(1987), it will familiarise them with the moral dilemmas that could arise in a real-life business environment, providing them with behavioural guidelines to be observed when making ethical decisions.

In addition, the proposed experiment is based on projects carried out with consultants, solicitors and universities, so we are therefore proposing an experiment involving real-life work, which we believe will motivate the students even more, for when they complete the study they will have acquired a variety of skills and abilities. In this sense, the students will gain technical knowledge of real data analysis instruments, will find out about sources for obtaining company data, will be able to organise themselves to work in a team, will develop research and communication skills, learning how to present their results using computer systems, and acquiring a better understanding of the impact of new technologies on companies and society in general, and will be able to justify their reasoning when synthesising information and evaluating a company.

To optimise the aforementioned development of skills and abilities, as shown by Lim (2004), the WebQuest needs to be well designed. In this sense, Dodge (1997) and Zheng et al (2007) indicate that the WebQuest should be structured into at least six parts: (1) introduction, (2) task, (3) sources of information, (4) description of the process, (5) evaluation of the result and (6) conclusion. In our proposal we add an additional level that consists on incorporating a Wiki application to the WebQuest to enable us to monitor each student's individual work.

### **3. DESIGNING THE WEBQUEST**

The aim of the WebQuest we are proposing is to generate generic skills among first year students on the Company Management and Administration degree course, which will enable them to analyse and synthesise accountancy and ethical information, put the theoretical knowledge they have acquired throughout the course into practice, acquire computer skills that will familiarise themselves with the information technologies used in the business environment, acquire skills for working autonomously and develop the social skills needed to work as a part of a team.

In order to achieve said objectives, we propose the following WebQuest titled "Do we invest in destruction or in sustainable companies?" which we structure into five parts.

## **Introduction**

In the introduction section we present the initial problem that students have to solve. To do this, we show the context in which the students are going to work, ensuring that we present a scenario that is in keeping with the realities of the business world in order to motivate the students. So, we propose a practical exercise to the students that simulates the kind of professional work they would encounter if they were employed by a real-life consultancy office, a pension fund management company or an investment management company.

To do so, we propose the following scenario:

The manager of an investment management company decides to increase the range of products it offers and to provide its clients with a new product that is in increasingly greater demand: a socially responsible investment fund. However, in order to manage the fund efficiently, the solicitor needs to select a combination of titles that optimise the portfolio's trinomial of profitability-risk-social responsibility.

To do so, an Ethics Commission is constituted for the fund, mainly made up of independent people that are related due to experience or proximity to the fund's principles, which include professors from the UAB's Department of Company Economy. This commission is responsible for determining the values or instruments, whose companies are adjusted to the criteria established in the aforementioned principles. From among these values, the Managing Company will select those that optimise the profitability-risk binomial of its portfolio.

Given that there is such a high number of Spanish companies that need to be evaluated, the Ethics Commission has asked the students studying Financial Accountancy as part of the Company Management and Administration and Law and the Company Management and Administration degree courses to help them make a report recommending the Spanish companies in which they could invest the monies in the fund in consideration of their business behaviour.

Are Spanish companies socially responsible?

## **Task**

In this section, we comment on the work that the students have to present following the research proposed in our WebQuest. In this case, the idea is to make a report on corporate responsibility and an oral PowerPoint presentation to be given to their classmates. We believe it is important for the students to have prior knowledge of the final product of the WebQuest, whose content is described as follows:

“The Financial Accountancy students, in commitment to society, the environment and ethical behaviour of companies, will provide their assistance to the Ethics Commission, and will make a report that evaluates whether Spanish companies carry out their activity in an ethical manner on the basis of the criteria of social, environmental and legal responsibility, and in respect of the social rights established in the ethical principles of the funds to be provided by the managing company itself.

So, the Ethics Commission will supply us with a directory of Spanish companies compiled by ESADE that groups companies into sectors, providing legal information in relation to their annual accounts, i.e. Balance Statement, Profits and Losses Account and Annual Report, as well as voluntary information relating to social responsibility, environmental reports and sustainability reports supplied by a large number of companies in the sector.

The students will make a group report, and will provide it in writing and present it in public before their colleagues, who will be able to ask questions and discuss the comments made. To do this, they should consult the Web, use the Wiki application to make the report, and make a PowerPoint presentation of the report.”

### **Process**

This section provides a detailed description of the preliminary steps to be followed by the students when preparing the report, and others related to the creation of the report on corporate responsibility and the presentation of the results. So, first, the work groups will be formed. In this sense, the number of students in each group needs to be determined, as well as the criteria for forming these groups.

With respect to the first issue, many academics, including Rue (2004) and Quinquer (1995) agree in saying that the perfect size of a group should be between two and four students, as this will promote discussion and the exchange of ideas without any of the members of the

group taking a passive role. Given that the group to which the work is being proposed has a large number of enrolled students, groups of four will be used, which will help the professor to supervise the process.

As for the criteria for forming groups, Alfonseca et al (2006) comment that the mechanism for forming groups could influence their learning process. So, there are two possibilities: (1) let the students form their own groups, which as suggested by Johnson and Johnson (1975) would lead to the formation of homogeneous groups and (2) for the professor(s) to decide on the people who will go into each group and randomly form homogenous and/or heterogeneous groups.

Alfonseca et al (2006) go for the first option because the literature supports the hypothesis that students tend to form groups in accordance with similar characteristics and skills, which could favour the learning process. However, when students obtain their degrees and are incorporated into private companies, the chances are that the company's employees will form a heterogeneous group in terms of skills and characteristics, which would imply the student having to integrate and adapt to the new situation if he or she wants to stay on in the job. So, to determine which work environment is most adequate, we apply each of the options to a large-group. In large-group A, the students voluntarily form groups in order to test the hypothesis made by Johnson and Johnson (1975) and Alfonseca et al (2006). In large-group B, the professors make the group classification randomly based on the moodle platform.

After that, the details of the calendar for carrying out the project and holding meetings with the professor are drafted. Then the structure of the corporate responsibility report is specified, showing the content of each section where reference should also be made to the sources from which the data was obtained.

In this sense, the report is made up of five parts: (1) Introduction, which specifies the aim of the report and critically comments on the operative principles around which the fund's ethical principles are constructed, a link to which will be provided on the website; (2) Indicators, for which guiding values are given to make it possible to determine whether a company complies with what is established by the fund's ethical principles by taking as a reference the social, environmental and economic indicators contained in the Guide for the Creation of Sustainability Reports (GRI) to which a link is provided in the WebQuest; Also in this section

and for each indicator, participants must comment on whether said information is obligatory or not and, if it is, where these regulations are given (3) Strategic map of the stakeholders, where the students should examine the information given by the company regarding its socially responsible activity and the options of the different stakeholders regarding the operative actions carried out by the company in order to determine whether it uses social corporate responsibility as a marketing strategy or whether it is a company value that is integrated in the company's mission; (4) Excluding criteria, where it is determined whether the company invests in other companies whose activity is injurious to human life, fails to respect human rights, promotes the destruction of peoples, deteriorates the environment, is damaging to public health, or does not act in accordance with ethical principles; (5) Evaluative criteria, where the student must examine whether the company being analysed invests in companies that show socially responsible behaviour in accordance with the established ethical principles; (6) Conclusion, where the students must recommend investment or not in the analysed company and justify this verdict.

To produce the aforementioned report, the students should consult legal information, i.e. Balance Statement, Profits and Losses Account and Annual Report, along with voluntary information provided by the companies in the form of social, environmental and sustainability reports. However, companies might manipulate their reports of results and voluntary reports on corporate social responsibility in order to cover up irresponsible or illegal behaviour. To deal with this, in addition to the information provided either voluntarily or under obligation by the company, the students should also use other sources of information. In this case, we propose making a search of a base of magazines in which the students must seek out journalistic articles providing information about the company.

So, each step implies exploratory work whose objective is to construct knowledge through critical reasoning regarding the questions being asked regarding the structure of the company's accounts, economy, finance and corporate responsibility. To do this, comments are established that are designed to act as "conceptual scaffolding", which help guide the students through the execution of the project.

This section also details the way in which the report should be presented. In this sense, students are told that the report should contain no more than 20 pages, using 1.5 spacing, size 12 fonts in Times New Roman, margins of 2.5 cm and numbered pages. The first page must

show the name of the company being analysed, the details of the students in the group (surnames, names and enrolment group), and the dates when the work was completed and handed in.

### **Evaluation**

This section contains the items that are evaluated and the scores that are given to each. The idea is to evaluate the skills acquired by the student in the proposed learning process. To do this, we distinguish between skills of a transversal nature that could be applied to many other subjects but which are no less important because of that, and specific skills related to the knowledge being worked upon here.

Among transversal skills we could cite:

- a) critical reasoning,
- b) good communication,
- c) autonomy
- d) creativity.

As specific skills involving the proposed subject we have:

- a) basic knowledge of the field of study
- b) capacity for analysis and synthesis,
- c) capacity to put knowledge into practice,
- d) teamwork
- e) decision making

To evaluate how students acquire skills, Baker (2008) compares different instruments showing that they are all reliable. However, said author focuses only on the joint evaluation of the group without taking into consideration the individual work done by each student within the same. Therefore, in the present work we evaluate the skills acquired by the students, assessing:

(1) the individual work done by each member of the group, which we observe by analysing the Wiki page. This enables us to evaluate the knowledge acquired by the students, their

capacity for analysis and synthesis, their autonomy, their capacity to put knowledge into practice and their critical reasoning.

(2) the work done by the group, where we take into account punctuality when respecting hand-in dates, and the quality and originality of the work. This also enables us to evaluate the aforementioned skills, teamwork and decision making.

The evaluation will be marked from 1 to 4 for each of the three proposed sections.

### **Conclusion**

After doing the task that we proposed, the students will be able to analyse and synthesize a company's the financial-economic-accountant information. The students will also be familiar with the accounting terminology, will know some databases which contain companies accounting information, will be able to put their knowledge into practice through critical thinking and will be able to coordinate themselves to work as a team and will have to skills for explaining their work in public. Besides, the students will be able to make decisions on where they could invest on the basis of companies' the corporate and social behaviour, will be able to skilfully handle the tools pertaining to the knowledge society to elaborate reports, will solve moral dilemmas that could arise in the business environment and will get into research skills.

Finally, they will have abilities to do research on corporate social responsibility. That's the reason why we challenge them to think about important questions in accounting area: Do you think that the companies should include corporate social responsibility's information in their annual reports? How could the companies include this information?

## **4. PRODUCTION OF REPORT USING WIKI APPLICATION**

The production of the report on corporate responsibility is made using the Wiki application, as this offers advantages through being easy to make and use, and enables the professor to control and modify the content of the same. Access to said application is made via the WebQuest, via a link in the "Process" section.

So, each work group will have one Wiki consisting of four parts: (1) project page, where the corporate responsibility report will be made following the criteria established in the fund's

ethical principles, (2) discussion, a space to be used by students to introduce their comments in relation to compliance or non-compliance with the excluding and evaluative criteria, as well as what they have found in journalistic articles and judicial sentences; (3) source or edition code, which makes it possible to make modifications to the project and discussion pages and (4) history, which enables the professor to monitor the individual work done by each member of the group and observe the development of the members of the same.

Said report will then be presented in writing in accordance with the aforementioned rules for delivery.

## **5. DATA COLLECTION**

In order to analyse the effectiveness of the above innovative learning methods, we designed a pre and post survey for the students involved, divided into two different sections: demographic and knowledge.

Responses for the initial survey were gathered from 170 students while for the post one 145 were collected. The distribution of the three groups and the main demographic characteristics are shown in Table 1 to 4.

[Tables 1 to 4 around here]

Both groups 1 and 2 correspond to students from Business Administration while the third corresponds to students from a Law and Business double degree. Those three groups have been chosen randomly between all groups of accounting in the first or second year.

From an initial analysis, we can see how female students are really predominant in the three groups, consistent with the tendency in Business studies in Spain. We see also that the age average is similar for the three groups, that most of them have done social pre university students and that their average pre university rate is quite high, consistent also with Business students in Spain. The highest pre university rate corresponds to the third group and also the age average is slightly higher as Accounting is programmed in the second year of the degree while in Business it is programmed in the first year. This is also consistent with the “stay at

university” data where we can see how group 3 is the one who’s been longer at university being their average stay of 4.5 semesters. As for the professional experience, we can see how most of them have none (64%) while only the 22% has a year of professional experience.

The first group (Group 1 in the tables) was composed of students where traditional learning methods were used. That is, a classical lesson was given where the teacher explained all the concepts included in the webquest. Slides were used in the class and students were given a pre and post survey in order to assess the effective learning on the subject.

The second and the third group (groups 2 and 3 in the tables) both worked with the webquest and the wikis. The difference between them was that in Group 2 the teacher made the teams randomly while in the other the students chose themselves who to work with. In any case groups were limited to four members. Both groups were also handed with a pre and post survey where the effective learning was tested.

## **6. METHODOLOGY AND RESULTS**

Authors like Allan y Street (2007) or Kanuka et al (2007), have remarked that there are differences in the level of knowledge students acquire depending on the method used in the class. Our aim is that students think about the importance of accounting as a tool for measuring and disclosing companies’ social behaviours. And we want to test if considering different learning methods, results are different.

To achieve our objective, in two of the groups we have used the webquest while in the third one we have used a lecture. Taking into account those alternative methods, we want to analyse differences in the acquisition of knowledge between those groups.

First, we do an initial evaluation of the knowledge of students in relation to social corporate responsibility. We base our evaluation in the initial survey, containing 12 test questions which can rank from 0 (wrong questions) to 8.33 (right questions) making the total up to 100 as we can see in table 5.

[Table 5 around here]

With those data we run an ANOVA to contrast if the three groups have, on average, similar previous knowledge on the subject.

[Table 6 around here]

F-statistic in table 6 shows how the groups do not have the same starting level on corporate social responsibility. However, consistency of those results is based on normality and homoscedasticity in the distribution of variable “knowledge”. That is why we use the Levene Test included also in table 6. This test shows evidence of the homoscedasticity of the variable in the three distributions. Besides, the Kolmogorow-Smirnov test studies if the variable is normally distributed. Table 7 shows the results for this test and for each of the groups. We can see how group 1 performs normally while groups 2 and 3 do not.

[Table 7 around here]

To ensure the robustness of the results, we also run the Kruskal-Wallis non parametric test. Results in table 6 are consistent with those from the parametric test ANOVA. Both show how, in average, there are significant differences in previous knowledge in the three groups analyzed.

However, neither ANOVA nor Kruskal-Wallis tells us where the difference is or which of the groups obtained, on average, a better result for previous knowledge. We add then, following Ovarce (2008), the post hoc Tukey’s honestly significant difference (HSD) multiple comparisons test. Results shows us how there are no significant differences between groups 2 and 3 but there are significant differences between groups 1 and 2 and also between 1 and 3, as shown in table 6. This test also classifies the groups into categories (two of them) as shown in table 8.

[Table 8 around here]

Table 8 shows two different categories for which average results are very similar. In the first category we find group 1 and in the second category we find groups 2 and 3.

We have also run a multiple comparison test, by means of a parametric analysis based on the t test for independent samples which must comply with normality and homoscedasticity and also a non parametric one based on the Mann-Whitney test which we will run comparing the mean for each group with the mean of the rest of the groups included in the analysis. Results are shown in table 6.

Values for the t-statistic do not allow us to accept the null hypothesis of equal means for groups 1 and 2 and also for groups 1 and 3 and, therefore, the average marks for the groups are significantly different. However, and as the distribution is not a normal one, we run the Mann-Whitney test. The results are consistent.

Therefore, results on knowledge in the previous test are significantly better for group 1 than for groups 2 and 3. Considering the Knowledge Gap Hypothesis (Tichenor et al (1970)), this could be due differences in the students' environment. That is, it could be possible that most students in Group 1 come from a different cultural or economic setting. They could be more receptive towards the acquisition and retention of new knowledge coming from the media and related to social corporate responsibility. Following this hypothesis, individuals with greater knowledge are more capable of learning than those coming with a lower level. In this way, more information about a subject could possibly increase the gap between groups.

In order to test the proposed hypothesis, we propose to students in groups 2 and 3 a collaborative task based on a webquest model. The groups are differently defined. In group 2, the teacher creates them randomly while in group 3 students choose who to work with. However, all the groups have four members except four where the number of members is five. The reason for the exceptions is the total number of students in the group. Students in group 1 attend a lecture where all concepts included in the webquest are presented in a powerpoint. After a week after the end of the task or the lecture, we evaluate knowledge for the three groups. The tool is the post survey, also including 12 questions and with the same ranking. Table 5 shows the results.

With those data, we run an ANOVA to determine if, on average, there are significant differences in the post knowledge for the three groups. F-statistic in table 9 shows that there are no significant differences, students in the three groups have reached, on average, similar levels of knowledge.

[Table 9 around here]

As those results are sensible to the normality and homoscedasticity assumptions for the sample populations, we run the Levene test to evaluate the homocedasticity first. The results (F-statistic= 5.619,  $p=0,004$ ) indicate that variances for post knowledge in the three populations are different. As for the normality assumption, the Kolmogorov-Smirnov test shows that our variable does not have a normal distribution. We run then the non parametric test Kruskal-Wallis. Table 7 shows us how the results are consistent even with non normality and heteroscedasticity ( $\chi^2= 4.086$ ,  $p= 0.130$ ). Means are equal for the three groups, consistently with ANOVA results, as we can see in table 9

To ensure the robustness of the results, we run the T test for independent samples in order to compare the average result of each group with the rest. Results show how there are no significant differences between groups 1 and 2 or between group 2 and 3. But we do find significant differences between 1 and 3. However, this result has to be cautiously interpreted as the T test requires of normality and homoscedasticity. We run the non parametric Mann Whitney test and see how there are no significant differences between the groups (Group 1: Z-statistic -1.486,  $p=0.137$ ; Group 2: Z-statistic -1.931,  $p=0,053$ ; Group 3: Z-statistic: -0.072,  $p= 0.942$ )

We reject then the Knowledge Gap Hypothesis as the webquest model in groups 2 and 3 has reduced considerably the initial differences in knowledge. The three groups get to similar levels of knowledge after the lecture/webquest when the starting point of group 1 was significantly better. Those results tells us how the technology in this case enables us to diminish differences in students level of knowledge.

In order to test that the results, on average, obtained by students after the lecture/webquest, are higher than before, we run a parametric analysis based on the T test for non independent

samples. Results in table 10 shows us that (1) populations are independent and (2) on average, students in the three groups have a higher level of knowledge after the lecture/webquest. Students in group 1 have increased, on average, 18.75 points (they have moved from 38.61 to 57.36). In group 2 students have improved in 30.61 points and in group 3 in 35.88. That is, students in the groups using the wiki-webquest, have acquired “more” knowledge, have learnt more.

To ensure the robustness of the results, we add the non parametric Wilcoxon test. Results are shown in table 10 and are consistent with previous tests. Knowledge after the lecture/wikiwebquest is significantly different (higher) from the starting knowledge for the three groups.

Additionally, and if we have a look at the box plots in Figures 1.1 and 1.2, we can see how the dispersion of the results diminishes considerably after the lecture/wikiwebquest. The median represented in both graphs are bigger after the corporate social responsibility task. Before the task, the median of groups 1 and 2 are identical while the median of group 3 is slightly smaller (25.00) as shown in table 5. However, after the task, both in group 2 and 3 50% of the students got a mark over 66.67 points while in group 1 half of the students have marks under 58.30. El desplazamiento de la mediana hacia abajo en los grupos 1 y 3 indican la existencia de asimetría positiva en los rendimientos iniciales obtenidos por los alumnos, evidenciándose la existencia de asimetría negativa en las distribuciones del grupo 2 tanto en la evaluación inicial como en la evaluación final. Por el contrario, las distribuciones de los rendimientos finales de los alumnos de los grupos 1 y 3 son simétricas.

Apart from the results derived from the pre and post surveys and which have evaluated acquisitions of knowledge, we did also obtain some qualitative results very relevant for the research project. In relation to the use of the wiki, the main objective of its inclusion was the possibility of individual students’ monitoring. However, we have found ourselves with some unexpected problems. Some students found it difficult to work with it and therefore worked in word and then did some copy and paste. That did not allow us to evaluate their individual participation. We believe then that the wiki has to be very friendly so that all students are able to work with it and it can be effectively used as a tool for qualifying collaborative work. Maybe some previous training would be worth it.

Some other qualitative results are based on the general satisfaction of students due to the participation in the experiments. Business students in Spain in the undergraduate do not usually find themselves with those experiments, especially in the first or second year, as there are always a lot of students which makes it very difficult for teachers to innovate. Students in the UAB felt implicated with it although they also found that it gave them quite a lot of work. In fact, a very interesting result we have also found is that although most of students thought that learning about social accounting with the wikiwebquest was going to be very motivating and efficient, once all the work was done and we asked them to choose a learning method, the percentage of students choosing the lesson as their preferred learning method raised in one of the groups while it decreases in the other. The group where the percentage increases is the “best” group in terms of pre university rate and also in terms of average marks in accounting studies. This leads us to think that “good” students in terms of performance may prefer a lesson where they get all the knowledge “needed” for the exam without going through the wiki webquest which takes them a bigger effort as any new learning experience.

In relation to the awareness of students about the importance of social accounting information, the results tells us then that the project as it has been programmed achieves the objective of increasing it. We have been able to appreciate from the reports students have written and presented in the wikis, how students have learnt about the usefulness of this information and about the necessary discussion of ethical and moral issues derived from the elaboration of the annual report.

## **7. CONCLUSIONS**

In this study, we propose the use of two tools pertaining to the knowledge society, namely a WebQuest and Wikis, to promote innovation and progress in the knowledge university students have of the financial and social accounting of companies and their responsibility towards society. Raising student awareness of issues of corporate social responsibility seems to us to be a fundamental part of their human and ethical training, and for preparing them for their future careers. Furthermore, the use of the WebQuest enables students to become actively involved in the learning process, acquiring skills, competences and abilities that will be of use when they complete their studies and go into employment. When the proposed

activity is completed, the students will have become familiar with ways of handling the accountancy reports provided by companies, developing a sophisticated level of knowledge in the area of accountancy, generating ideas and knowledge as a result of the experience, and developing social skills and capacities as a consequence of the interaction between the members of the work group. They will also be familiarised with information technologies, which are fully integrated in the business environment they will be joining in the immediate future. This methodology also combines a web environment with other sources of knowledge beyond the traditional ones that students can use and which are also detailed in the WebQuest, which enables them to broaden their horizons and come into early contact with tools that will be of great use to them in the future.

The summary of the findings is as follows:

1. The average results of knowledge previous to the task for the three groups are significantly different. Group 1 presents differences with groups 2 and 3 while those two groups do not present any significant differences. A possible explanation for this could be the Knowledge Gap Hypothesis. However, differences in the level of knowledge after the task do not confirm that students with a higher starting level acquire more knowledge than students in worst groups.
2. The average results of knowledge after the task present no significant differences for the three groups. That is, all the groups have reached a similar level of knowledge in relation to corporate social responsibility. However, the starting point of Group 1 was significantly higher than the rest.
3. The use of learning methods from the knowledge society allows students with a prior lower level of learning achieve a similar rate than those belonging to the best group. In that sense the implementation of the wikiwebquest has allowed us to diminish dispersion on the results of the groups. And that is, no doubt, one of the biggest aims of education, eliminating starting differences in students so they can all get to the highest levels of knowledge in the best way.
4. The use of those new environments requires that they are friendly and very well designed. Difficulties in the use of the webquest or the wiki will not allow teachers to take all the advantages of those new tools.

5. Students show general satisfaction on the project. Although they also say that it was hard work, they feel highly satisfied about it, they find it innovative and motivating as they feel as participating in a new experience not frequent at all in undergraduate business students in their first years.

6. In relation to the awareness of students about the importance of social accounting information, we have been able to appreciate from the reports how they have learnt about the usefulness of this information and about the necessary discussion of ethical and moral issues derived from the elaboration of the annual report.

The main limitation of the paper is that we have not considered the time factor. That is, we conclude that the wikiwebquest succeeds in getting students in the “worst” groups to the same levels of knowledge than students with the highest starting level. However, we have not considered the time used for the elaboration of the project. Even though we believe that undergraduate students do have time to do those experiments, it is an important aspect to consider in a continuing project.

The implications of the paper support the new environment coming in the future. The European Higher Education Area and the knowledge society mean changing methods and learning approaches. The paper shows us how, implementing those new technologies, improves the learning process while diminishing differences between students.

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**Figure 1: Box Plot for knowledge after and before for the three groups**

Figure 1.1

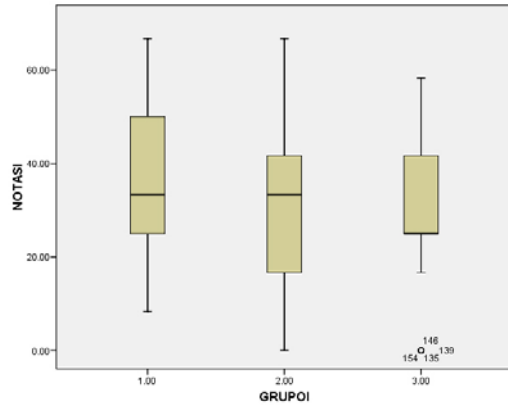
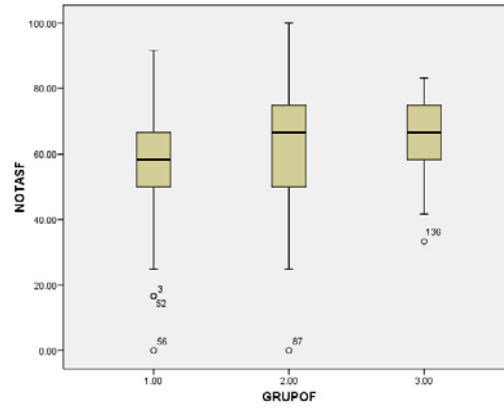


Figure 1.2



**Table 1:** Groups' distribution

	Initial Survey		Final Survey	
Group 1	68	40%	60	41%
Group 2	61	36%	49	34%
Group 3	41	24%	36	25%
	170	100%	145	100%

**Table 2:** Demographic distribution

	Gender				Age				
	Male		Female		Total	Mean	Des.st.	Median	
Group 1	25	37%	43	63%	68	100%	18,7	1,2	18,0
Group 2	24	39%	37	61%	61	100%	18,8	2,2	18,0
Group 3	10	24%	31	76%	41	100%	19,7	1,3	19,0
	59	35%	111	65%	170	100%			

**Table 3:** Previous Studies

	Previous studies								Pre univ mark				
	Social		Scientific		Health		Others		Total	Mean	Desv.St.	Median	
Group 1	51	75%	10	15%	4	6%	3	4%	68	100%	7,0	0,7	6,8
Group 2	43	70%	7	11%	5	8%	6	10%	61	100%	6,9	0,6	7,0
Group 3	32	78%	7	17%	1	2%	1	2%	41	100%	7,5	0,6	7,5
	126	74%	24	14%	10	6%	10	6%	170	100%			

**Table 4:** Professional experience and stay at University

	None	Less 1 year	1-2 years	2-5 years		More 5 years		Stay at university				
				years	years	Mean	Desv.St.					
Group 1	45	66%	13	19%	6	9%	3	4%	0	0%	2,2	1,4
Group 2	33	54%	18	30%	5	8%	3	5%	1	2%	2,0	0,4
Group 3	31	76%	6	15%	3	7%	1	2%	0	0%	4,5	1,9
	109	64%	37	22%	14	8%	7	4%	1	1%		

**Table 5: Descriptives on knowledge**

	INITIAL EVALUATION			FINAL EVALUATION		
	GROUP 1	GROUP 2	GROUP 3	GROUP 1	GROUP 2	GROUP 3
Number Students	68	61	41	60	49	36
Mean	36.89	29.37	28.86	57.36	61.74	64.58
Median	33.33	33.33	25.00	58.33	66.67	66.67
Desv. st	16.25	15.34	14.45	18.23	20.76	11.16
Mínium	8.33	0.00	0.00	0.00	0.00	33.33
Máximum	66.67	66.67	58.33	91.67	100.00	83.33
Assymetry	0.12	0.21	-0.19	-0.80	-0.78	-0.57
Kurtosis	-0.80	-0.10	-0.05	0.88	0.41	0.73

**Table 6: Pre surveys results on knowledge**

TEST	ALL	GROUPS 1-2	GROUPS 1-3	GROUPS 2-3
<b>Parametric tests</b>				
ANOVA				
• F(2,167)	5.072			
• p-value	0.007			
Levene test				
• F Statistic	0.808	0.494	1.581	0.379
• p-value	0.448	0.483	0.211	0.539
Tukey's post hoc HSD test				
• Means' differences		7.51567	8.02547	0.50980
• p-value		0.018	0.026	0.985
Independent simple T test				
• t statistic		2.693	2.602	0.168
• p-value		0.008	0.011	0.867
<b>No parametric tests</b>				
Kruskal-Wallis test				
• Chi-square	8.205			
• p-value	0.017			
Mann-Whitney test				
• Z statistic		-2.504	-2.309	-0.049
• p-value (bilateral)		0.012	0.021	0.961

**Table 7: Normality Tests Results**

	INITIAL EVALUATION			FINAL EVALUATION		
	GROUP 1	GROUP 2	GROUP 3	GROUP 1	GROUP 2	GROUP 3
Normality Test						
• K-S (a) Z statistic	0.106	0.127	0.175	0.138	0.165	0.185
• p-value (bilateral)	0.056	0.017	0.003	0.006	0.002	0.003

a Lilliefors significance correction

**Table 8: Tukey HSD homogeneous groups' test**

Subset (Alpha=0.05)			
Methodology	N	1	2
Group 1	68		36.887
Group 2	61	29.372	
Group 3	41	28.862	
Significance	0.000		1.000

**Table 9: Tests for independent samples**

TEST	EVALUACIÓN INICIAL				EVALUACIÓN FINAL			
	ALL	GROUPS 1-2	GROUPS 1-3	GROUPS 2-3	ALL	GROUPS 1-2	GROUPS 1-3	GROUPS 2-3
<b>Parametric tests</b>								
ANOVA • F(2,167) • p-value	5.072 0.007				2.010 0.138			
Prueba de Levene • Estadístico F • p-value	0.808 0.448	0.494 0.483	1.581 0.211	0.379 0.539	5.619 0.004	1.230 0.270	6.459 0.013	12.080 0.001
Prueba post hoc HSD de Tukey • Diferencia de medias • p-value		7.51567 0.018	8.02547 0.026	0.50980 0.985				
Prueba T muestras independientes • Estadístico t • p-value		2.693 0.008	2.602 0.011	0.168 0.867		-1.171 0.244	-2.408 0.018	-0.814 0.418
<b>No parametric tests</b>								
Prueba de Kruskal-Wallis • Chi-cuadrado • p-value	8.205 0.017				4.086 0.130			
Prueba de Mann-Whitney • Estadístico Z • p-value (bilateral)		-2.504 0.012	-2.309 0.021	-0.049 0.961		-1.486 0.137	-1.931 0.053	-0.072 0.942

**Table 10: Tests for non independent samples**

<b>TESTS</b>	<b>GROUP 1</b>	<b>GROUP 2</b>	<b>GROUP 3</b>
<b>Parametric tests</b>			
T test			
• t-statistic	-6.220	-8.727	-10.983
• p-value	0.000	0.000	0.000
Correlation test			
• Pearson coefficient	0.059	0.105	-0.069
• P-value	0.653	0.473	0.687
<b>No parametric tests</b>			
Wilcoxon test			
• Z*-statistic	-4.921	-5.385	-5.105
• p-value (bilateral)	0.000	0.000	0.000

\*Z statistic calculation base don negative results.