MACROECONOMICS IN PRACTICE: USING WIKIS FOR COLLABORATIVE LEARNING

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Abstract

This project is based on the creation of collaborative wikis for students of Macroeconomics to elaborate a final work in which they apply the theoretical knowledge learnt in the subject to the real world. The initiative was implemented during the course 2015-2016 and aimed at 140 students enrolled in the subject at the Degree of Finance and Accountancy of the University of Cadiz.

To emphasize the link between the theories explained in class and the real world, in previous courses we have already used news and other resources. With this project, we now introduce the use of wikis, which consist on the creation of a website to allow collaborative creation and modification of contents and structure from the web browser. Students were organized in 44 teams, of about 3 members, to examine data on a certain macroeconomic variable (i.e. inflation or GDP), in a particular geographical context (i.e. G20 or EU countries). The objectives of the project include: i) to enhance learning and comprehension of theoretical knowledge and ii) to contribute to the development of skills related to the subject, such as the skill to apply the acquired knowledge, the skill to analyze and search information and teamwork. Students' opinions gathered from a survey at the end of the course suggest that these objectives have been achieved.

Keywords: Wiki, Collaborative learning, Macroeconomics

1   INTRODUCTION

The project consists on the analysis of data by groups of students about a certain macroeconomic variable in a specific geographical context through wikis created in Moodle. Students of the course, by accessing all the wikis could be able to have a complete view of the current situation and the economic evolution of that set of countries. Therefore, the project described in this paper is the product of the convergence of macroeconomics, wikis and collaborative learning.

Macroeconomics, despite based upon highly theoretical knowledge, can be applicable to the economic reality of countries. In order to get students to understand the link between the theoretical contents explained in classes and real world, during past courses we have complemented our lectures with different teaching resources such as discussion of economic news and forums. In this project, we keep exploring this line of teaching, implementing an activity in which students working in groups in a collaborative way, must elaborate an application work of the theoretical knowledge acquired in the subject. Being designed as a collaborative task, students could benefit from the synergies among their teammates, supporting one to each other in order to enhance their learning. Collaborative learning has been programmed as an out-of-classroom activity and implemented through wikis created in Moodle.

The objectives of this project are twofold. First, we aim to improve student's comprehension of theoretical knowledge through its application to real-world. Second, we pursue to promote the development of skills such as the skill to put into practice the acquired knowledge, skills to analyze and search information and teamwork. Since it has been designed as an application work of the knowledge acquired during the course, it is aimed that students are able to search information about macroeconomics variables for a group of countries, so building upon the data they found, they could obtained their own conclusions and contrast them with the rest of team members. In this way, the realization of the activity contributes to develop teamwork skills. We also expect that the elaboration of

contents that are later shared by all students contribute to improve the teaching learning process of our students.

In order to evaluate the contribution of the activity to the improvement of the teaching-learning process of students, they have filled in a survey at the end of the semester. The rest of this paper is organized as follows. Section 2 introduces wikis and describes the project. Section 3 shows students opinion on the project. Conclusions are obtained in the final section.

## 2   COLLABORATIVE LEARNING THROUGH WIKIS

"A wiki is an editable website, accessible from any web browser, that any participant can read or modify" (translated from [1]). Considering the definition of wiki, its application in teaching is very attractive because it allows a set of objectives pursued largely in education, such as collaborative learning or actively involving students in their own construction of knowledge [2][3][4]. Moreover, through this software tool the teacher can check the contribution of each student to the wiki, since authoring of contents is recorded. At the same time, it allows the teacher to compare the different versions that students edit during the course and follow up the progress made by the teams. However, tracking the contribution of each member in Moodle, may be time-consuming because Moodle does not provide a summary of the percentage of contribution of each person [5]. Wikis are being widely implemented as an educational tool [6][7][8]), including a range of uses [7]: i.e. building collaborative annotated bibliography, mapping concepts and group authoring. The later, in contrast with traditional editing methods, pulls the group members together and enables them to build and edit the document on a single, central wiki page. In this project, we have focused on using wikis as a mean for group authoring to expand the materials available to students and share contents among groups. In this regard, using wikis may serve as an incentive for collaboration among team members, because wikis allows the modification, correction and widening of contents previously introduced by other mates. But also, using wikis, enables sharing those contents with the whole class, widening the stock of additional material available to students for learning, to compare and examine the tasks of the rest of classmates. However, although wikis may facilitate collaboration, they do not necessarily involve collaboration since obstacles, such as the lack of incentives and the lack of support for team work, need to be overcame [3].

During the academic year 2015-2016, we have introduced collaborative activity consisting on an application work of the knowledge acquired in the subject of Macroeconomics. This subject relies on lectures as the main teaching method, but also focused on promoting students participations in lectures through teachers-to-students questions and students-to-teachers questions. But although "chalk and talk" is the most popular method in teaching economics [9], the efficiency in the lectures may be increased if they are combined with other teaching methods in which students play an active role. In this regard, collaborative learning is one of the most popular methods in teaching economics [10] [11] [12.]. In collaborative learning, students achieve their objectives only if every member of the group achieves theirs [13].

The implementation of project has followed different phases:

1) Definition of the tasks. We identified a set of tasks, each of them consisting on analyzing a macroeconomics variable (i.e. GDP, Inflation or public debt) for a group of countries (i.e. G20 or EU). In total, we defined six groups of countries and 7 macroeconomic variables to be analyzed.
2) Presentation of the activity. At the beginning of the course we presented the activity to students in person and elaborated a guide with all the information about the activity, which was made available to students on Moodle.
3) Creation of groups. At the beginning of the course, we informed our students about the possibility to participate in the project. Those students aiming at participating in the project were asked to make groups of 3-4 members, allowing them to choose their teammates. There were 44 groups in total.
4) Creation of the structure of wikis on Moodle. Different groups were assigned different wikis to work on the same group of countries and different variables. For this task, we got support from the technical staff of the virtual campus of our university, who created 6 wikis and 44 groups on Moodle (see Figure 1). Each wiki is designed as a collaboration website among groups analyzing economic variables for the same group of countries.

Figure 1. Example of the structure of one of the wikis we created.
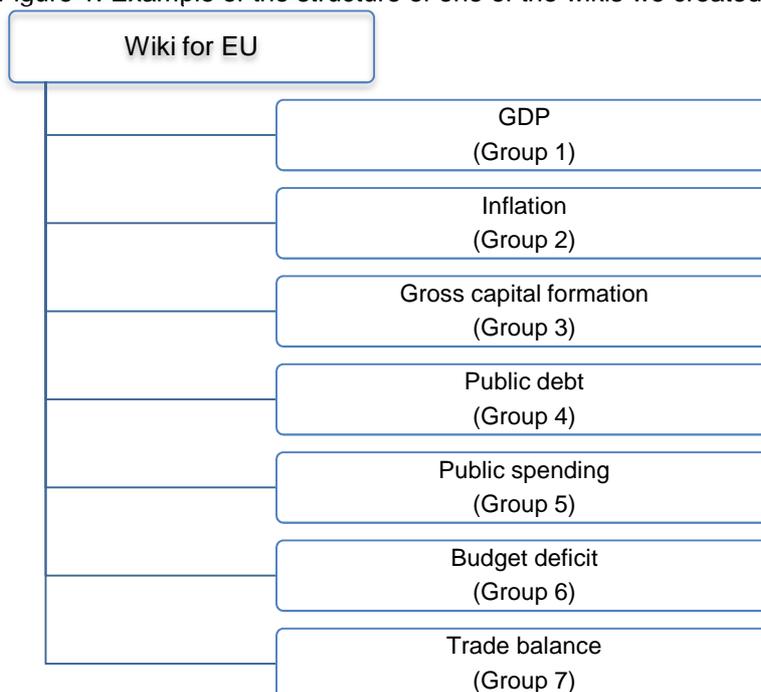
Source: Own elaboration

5) Edition and publication of contents by students. As abovementioned, several groups of students elaborate contents within a wiki. Although all teams can edit wikis, each of them must collaborate only on the wiki they have been assigned by the teachers. Within each group, the contributions of each team member may be corrected, extended or modified by the rest of the team, but not colleagues from other groups. Therefore, this is the first level in which collaborative learning among students take place. The rest of students in the course may access the contents of each wiki, created by a group of teams, so collaboration expands beyond the group. In this regard, wikis have a significant advantage versus other tools to present essays (paperwork, homework or email tool through Moodle) since it allows students to analyze, compare and criticize the work done by all the groups in the class.

6) Evaluation. Teacher evaluation is based on the contents elaborated by each team and is the same for all the team members, which can motivate students to collaborate in the elaboration of the report. The evaluation of the content elaborated by each group represents 10% of the final mark .

3   RESULTS

In order to know the students' perception about the contribution of the activity to improving the teaching- learning process, we conducted a survey opinion to students by the end of the course. Students can answer each question in the survey according to the following Likert scale: Strongly disagree (1), somewhat disagree (2), neither agree nor disagree (3), somewhat agree and (4) strongly agree (5). Next, we present the results, which must be interpreted with caution, because the number of respondents is 26. However, since these are those students who attended to classes regularly and admit that they have a high level of implication in the activity (80.8% and 72.0%, respectively), their opinion, although may not represent the whole population, may serve to analyze the experience and future improvements that can be made.

Firstly, there are differences regarding the organization of the different teams for doing the work. Some, have collaborate in the search of information and the analysis of the data, other have collaborated only on the search of information, individually analysing the data and other have broken up the activity into parts, assigning one task to each member of the group and merging them to obtain the final essay.

Secondly, our students have not found problems related to the lack of collaboration among team members, the equal contribution of all members or a bad relationship among them. This may be explained, because as already mentioned, they could freely choose their teammates. The use of Wiki has not presented much inconvenience for students: only 26.9 % of our students admit to have found technical difficulties with the wikis. It is also remarkable that the fact that contents elaborated by a team become accessible for their classmates does not represent an important drawback for student. This is important, because making the contents available for the class was one of the main reasons that motivated us to use wikis.

Table 1 shows the results of the questions related to the objectives of the project. As shown, the majority of students think that the collaborative work has positively contributed to the understanding of the international economic context and of the main macroeconomic variables (65.4% and 61.5% of students somewhat/strongly agree with these statements, respectively). Similarly, most of students positively evaluate the contribution of the work to the development of skills related to search and verification of economic information for countries and the use of statistical sources of information for obtaining the data (65.4% and 57.7% of students somewhat/strongly agree with these statements, respectively).

Table 1. Students' opinion on the contribution of the experience to improve learning and develop certain skills (%)

Statement: The elaboration of the work…	1	2	3	4	5
…Contributes to the understanding of the main macroeconomic variables	0.0	15.4	23.1	38.5	23.1
…Contributes to the understanding of the international economic context	0.0	7.7	26.9	53.8	11.5
…Promotes data search and the use of statistical sources	3.8	11.5	26.9	42.3	15.4
…Promotes the search and verification of economic information of countries	3.8	7.7	23.1	53.8	11.5
…Facilitates learning	4.0	16.0	36.0	28.0	16.0

Source: Own elaboration

Table 2 shows the results of the questions related to the use of wiki as a tool to elaborate and present the final work. Focusing on the rate of students that somewhat/strongly agree with these statements, we find that 50% of students think that wikis promotes the skill for teamwork and 57.7% consider that it motivates collaboration among teammates. The latter, is especially relevant when compared to the relatively small rate of students that somewhat/strongly disagree (19.2%). Similarly, 50% of students think that the use of wikis motivates collaboration to a larger extent than other tools for the elaboration/presentation of works, while only 19.2% of students disagree with this statement. Only 38.5% of students think that technical possibilities of the wikis contribute to enrich the contents of the work, while it is remarkable that a large proportion of students neither agree nor disagree with this assumption (42.3%).

Table 2. Students' opinion on the use of wiki as a tool to elaborate and present the final work

Statement: The use of wikis…	1	2	3	4	5
…Motivates collaboration among team members	7.7	11.5	23.1	50.0	7.7
…Motivates to collaboration among team members more than other ways of work presentation (e.g. hard copies or mail)	7.7	11.5	30.8	38.5	11.5
…Facilitates learning by enabling access to the wikis of the whole class	11.5	15.4	30.8	34.6	7.7
…Enables the enrichment of the content of the work because its technical possibilities (e.g. links to other website or collaborative edition of contents)	7.7	11.5	42.3	30.8	7.7
…Promotes to improve my team-work skill	7.7	11.5	30.8	34.6	15.4

Source: Own elaboration

Finally, it must be highlighted that 44% of students think that the project has facilitated the learning process (Table 1) and 42.3% of students think that having access to contents elaborate by classmates contributes to their learning (Table 2).

4 CONCLUSIONS

The growing use of TICS in education has caused an increasing interest in knowing their contribution to the teaching-learning process. In this line, this project has been based on the creation of wikis in collaboration among students to elaborate and share and application work on the subject of Macroeconomics. The main objectives of the project were a) improving the comprehension of theoretical knowledge through its application to real world and b) promoting the development of skills such as the skill to put into practice the acquired knowledge, skills to analyze and search information and teamwork.

The results obtained through a survey to students show that the project has contributed to achieve these objectives. Specifically, the project has contributed to the application of theoretical knowledge to real world, a better understanding of the international economic context and of the main macroeconomic variables, which are essential issues related to the study of Macroeconomic, as well as promoting data search. Similarly, the results show that the use of wikis has facilitated the collaborative teamwork skills and it may have promoted collaboration even more than other tools for elaborating and presenting works.

Although these results are based on the opinion of a relatively small sample of students, it may still serve to get insights into the value added of the project for students and possible ways to improve it in future courses. Regarding the latter, in future courses using wikis for collaborative learning, it would be recommended to offer students some training and support documentation about the use of wikis and the technical possibilities it offers,(e.g. links to other websites or the inclusion of graphs and pictures). Finally, although the experience has implied more workload for teachers in the subject, in terms of design and evaluation of the activity, we think that its benefits from students' viewpoint are a good reason to keep using wikis in the subject.

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