# Starting out at university with team projects

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## ABSTRACT

In this work we describe the design and outcomes of a Starting-Out Project [3], which was conducted at the Universidad Politécnica de Madrid's School of Computing before students started their courses, as a welcoming and guidance activity. One goal is to motivate students, while, at the same time, familiarizing them with the institution, its services and associations, and fostering social integration. As an educational objective, the project intends to train and assess students in basic horizontal skills related to teamwork and effective oral communication.

#### **Categories and Subject Descriptors**

K.3.1 [COMPUTERS AND EDUCATION]: Computer Uses in Education - *Collaborative learning*.

#### **General Terms**

Documentation, Human Factors.

#### **Keywords**

Collaborative work, Communication skills.

#### **1. INTRODUCTION**

Starting university is a major challenge for fresher students. They enter a new universe with unfamiliar logistics, resources and working methods, and they need some help to smooth their transition to the new environment. This is an even bigger problem now as Spain adapts to the European Higher Education Area, generating uncertainty about the new curricula focused on competences development. We have decided to start the course by developing horizontal competences. This should make students understand the importance of competences and motivate them to change their attitude towards learning, encouraging them to get actively involved in their learning process.

## 2. DESCRIPTION OF THE WORK

Over the last few years there has been a growth in the literature on project-based learning (PBL) techniques applied to all kinds of studies [4]. The experience that we are presenting here was inspired by these PBL techniques. Its scope is, however, reduced as it was carried out before the first university course started. In this project, the students, divided into six-member groups and tutored by a faculty member, carried out teamwork designed to develop horizontal competences within a free and creative environment. They were expected to deliver a final oral presentation prepared in the manner of a scientific or technical talk. Tutors and students attended this session, and each student group presented their work. The tutors' job was to give guidance about and evaluate the students' work. During the week the project was carried out, supplementary activities, such as seminars on oral communication skills and collaborative work, were organized. Additionally, several meetings with the tutor, and individual work and teamwork time were scheduled.

## 3. A SPECIMEN PROJECT

Our experience consisted of proposing the following project that we called TOM-TOM-FI. The objective of this project was to model the problem of finding the shortest path between two points on the campus and the time taken to travel this path, illustrating several examples of paths. The students were to design two graphs, one for general use and another for wheelchairs. Once they had designed the graphs, they were to use a free or shareware web tool implementing Dijkstra's algorithm to automatically find the shortest path between two points on campus and the time it would take to travel the path (PathFinder eMathTeacher [2] was suggested). Project tasks consisted of creating a team web page at Google Sites, collecting data for graph design, and Internet- and paper-based searches of literature about shortest path problems and Dijkstra's algorithm applications (at least 6 links, 6 books and 2 internet tools). Students were also expected to reference the literature they found, introduce both graphs in the chosen tool in order to find the shortest paths and prepare the presentation.

### 4. CONCLUSION

Students and tutors have conducted a preliminary evaluation of the first Starting-Out Project at evaluation meetings. The results are very positive in terms of student motivation. Students are familiarized with the new physical and social space that they are entering, as well as with resources such as the virtual classroom or the services provided by the School of Computing. This somehow gives them a sense of belonging from the very start of their course. Additionally, we expect the abilities that they developed while completing this project -collaborative work skills, oral communication, written expression, use of technologies, information management...– to be useful for the course units that they take during their first year at university. This will be evaluated again at the end of the year by tutors and students. Further ideas for mathematically oriented starting-out projects can be found in [1].

## 5. REFERENCES

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