Impact of Part-Time CS Engineering Internships on Workload

Juan J. Olarte, César Domínguez, Arturo Jaime, Francisco J. García-Izquierdo
University of La Rioja
Logroño, Spain
{jjolarte, cesar.dominguez, arturo.jaime, francisco.garcia}@unirioja.es

ABSTRACT

This study evaluates the impact of part-time internships (PTI) on concurrent subjects and students' satisfaction, in a Computer Science (CS) Engineering degree program. PTI offer some advantages: the technologies learned have a very positive influence on the quality of subsequent capstone projects (CP), students maintain in contact with the university, and synergies can be generated. Nevertheless, there are some challenges as well: maintaining a reasonable workload for students and achieving optimal coordination among different subjects.

CCS CONCEPTS

• Social and professional topics ~ Computer Science Education

KEYWORDS

Internships, workload, coordination across subjects

1   INTRODUCTION

Internships in CS Engineering degree programs present advantages for students, the participating companies and universities, as has been broadly reflected in the literature [1]. On the other hand, these types of internships also pose some challenges [1] in terms of design, finding collaborating companies, and company-university coordination. Internships can be full-time or part-time. This study analyzes how PTI affect students' workload in concurrent subjects, student satisfaction, and the internship's impact on CP.

2   RESULTS AND CONCLUSIONS

Organization. At our university, internships last for four months during the first semester (September-December) of the fourth year of the program (which is the last one). Internships occur simultaneously with three other subjects related to professional, cross-curricular and security topics. After the internship is completed, during their final semester, students complete their CP, which in 80% of the cases is done at the same company where the student did their internship. This arrangement maximizes the benefits of industrial CP and has been widely studied in the literature [2]. Students have a better opinion of their own skills and projects than academics do, and it seems that industrial CP attract more highly-skilled students [2].

Workload. During the internships, 35 fourth-year students declare a mean workload of 50 hours per week on a questionnaire (25 hours for internships, 15 for lectures, 10 for studying). After completing the internship, the workload decreased to 41.2 hours. Students in the first three years of the program (116) declare a mean of 38.7 hours at the beginning of the semester and 45.8 at the end. In addition, study time per lecture hour shows behavioral differences among students of the first three years of the degree program and those in the fourth and final year. During the first three years, the workload started out 0.8 hours, and then reached 1.3 in January. However, fourth-year students dedicated 0.5 hours during the internship, which increased to 0.8 after the internship was completed, which does not match the level of effort of past years. This could be because other subjects adapt their demands to students' availability. These facts prove a challenge of PTI: planning in the simultaneous subjects must consider workload of internships.

Satisfaction. Despite students' heavy workload during internships, students declared a high level of satisfaction with the organization of the program (4 points out of 5).

Conclusions. PTI share some of the benefits of full-time internships, and add other advantages: (1) The ICT technologies learned during PTI are then used in CP, thereby notably improving their quality, (2) students maintain contact with the university, and (3) synergies can be generated with simultaneous subjects. However, certain challenges must be addressed by the other subjects: (1) adapt their workload so that it is lower at the beginning of the semester and greater at the end; and (2) select subjects with more professional, cross-curricular or practical topics in order to facilitate synergies. Despite the benefits of internships, their integration into CS degree programs seems less evolved than in other areas such as health or education (at least in the case of Spain).

REFERENCES

[1] Shin, Y. S., Lee, K. W., Ahn, J. S., & Jung, J. W. (2013). Development of internship & capstone design integrated program for university-industry collaboration. Procedia-Social and Behavioral Sciences, 102, 386-391.

[2] Olarte, J. J., Domínguez, C., Jaime, A., & García-Izquierdo, F. J. (2016). Student and Staff Perceptions of Key Aspects of Computer Science Engineering capstone projects. IEEE Transactions on Education, 59(1), 45-51.