Capstone Projects in Computer Science: Evaluated by Stakeholders

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ABSTRACT
This study evaluates several aspects related to capstone projects in a computer science degree: level of advisor involvement, type of student, and type of project. We consider the points of view of students, advisors, and evaluation committees. Students claimed the level of advisor involvement to be significantly greater than that perceived by the advisors themselves. Regarding students skills, we found no significant differences between the opinions of advisors and students. And lastly, students have a significantly better opinion about their projects than advisors do.

Categories and Subject Descriptors
D.2.9 [Management of Computing and Information Systems]: Project and People Management – Life cycle, management technique, systems development.

General Terms
Management; experimentation.

Keywords
Capstone project; computer science degree.

1. INTRODUCTION
Computer science degree programs [1] often expect students to undertake a capstone project integrating the specific knowledge and skills acquired over the course of their studies, along with other orthogonal skills required by professional work. The project generally comprises the life-cycle of an information system development. An advisor guides the student and supervises the process. Although the scope may vary, a considerable proportion of projects follow comparable guidelines. When the project is completed, students present a portfolio compiling the written deliverables and the product itself (when appropriate). Finally, students give an oral presentation on the project to a committee of three professors. Each project is graded by both the advisor and the committee.

This study compares the points of view of students, advisors and evaluation committees regarding capstone projects. Three questionnaires were developed to survey each stakeholder.

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2. RESULTS AND CONCLUSIONS
We successfully gathered the surveys corresponding to 36 projects developed during the last academic year.

Level of advisor involvement: Our questionnaires addresses the primary facets of project supervision [2]: technology, initial arrangements, keeping the project alive, execution, meetings, management, and reports. Students indicated a level of advisor involvement significantly greater than that perceived by the advisor. This is a telling observation, since it is difficult for advisers to strike the proper balance between encouraging student autonomy and monitoring project development. Consequently, advisors could slightly reduce the level of monitoring in the future

Student skills: The questionnaires assessed the autonomy, project management, meetings/communication, technology, methodology, and writing skills of students. We did not find significant differences between the opinions of students and their advisors, although students’ opinion is slightly higher regarding all the aforementioned items.

Project features: We also evaluated the need for training, product usefulness, project complexity, technological innovation, and scope. The surveys of advisors and committees solicited the project grade. We found significant differences among the three points of view regarding scope, complexity, and usefulness of the product (the latter showed only a significant tendency). Students had a better opinion of their projects than the other stakeholders. In fact, there were significant differences between student and advisor perspectives on all these project features, except for the need for training and technological innovation. Committees held a better opinion –but not significant– of the projects than advisors (except for the need for training). However, committees proposed slightly lower grades than advisors. It appears that the views of committees and consultants on projects were very similar, while students deemed their work to be of a higher quality. Students’ lack of a comparative overview of other projects may explain this difference of opinion. Students consider only their own project strengths to the other stakeholders.

3. REFERENCES

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