

# Project-Oriented Education –

## A Teacher Perspective On What It Is And How It Could Be Applied

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### ABSTRACT

*This paper describes what project-oriented education is and how it could be applied in universities. It focuses on the teachers' perspective on how to plan and implement a project-oriented course, and how it improves the students' skills and learning. The planning is based on the triple constraint model. Implementing the course consists of five project management phases; initiating, planning, executing, monitoring and controlling, and, finally, closing. The students improve their skills in coordination, decision-making, collaboration, and communication, and they learn about the product of the project. Project-oriented education has been applied to undergraduate courses at Linköping University. **Keywords:** Learning, project, project management phase, project-oriented education, skill, triple constraint model*

### INTRODUCTION

Project work is growing and more and more people are working in projects [6, 14], sometimes using a project management model [4]. General research has been done on the subject of projects [2, 3, 7, 10, 13], and there has also been some research specifically about project-oriented education [5, 8, 18]. The purpose of this paper is to present an additional perspective, a teachers' perspective, on what project-oriented education is and how it could be applied in university education. In this paper "teacher" refers to a person who has the overall responsibility for the course; a teacher may be an individual course leader, a team of instructors, or an examiner, depending on the type of university course. The paper is arranged in the following sections: the second section presents the research approach, the third section describes the result, and, finally, section four presents concluding remarks and future work.

### RESEARCH APPROACH

Results in this paper come from a prototype course called the Systems Development Project. It is a fifteen-week A-level course at Linköping University. This course was redesigned for project work in 2002, and it was implemented and tested in early 2003. After that the course was evaluated and redesigned. It was evaluated by students, teachers and

other pedagogical technique, like problem based learning [12].

In early 2004 the course was implemented [16, 17] and tested again, and it was evaluated and redesigned. Approximately ninety students have read the course. The course was evaluated by students and teachers, who focused their evaluations on pedagogical techniques, such as problem-based learning [8].

### PROJECT-ORIENTED EDUCATION

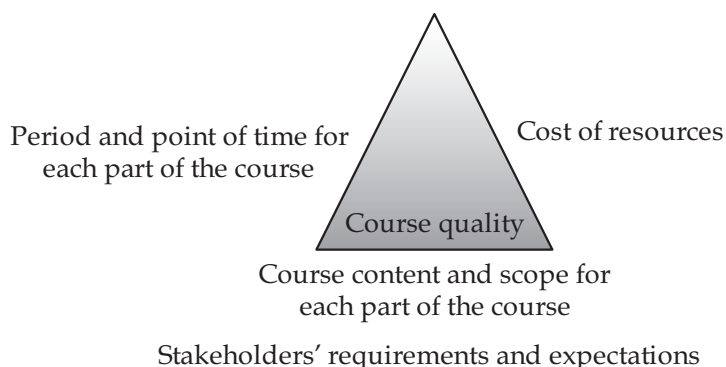
It is important for a teacher to develop a deeper understanding of the knowledge and practice in project management. There is a great deal of knowledge and practice that can be used in education, for instance, how to prioritize among the project's triple constraints [1], phases of a project life cycle, and how to develop skills and knowledge in team members [11]. Examples of implementation of this project knowledge are described in the next three sections.

#### Planning a project-oriented course

At the beginning of planning a project-oriented course, the teacher can use the triple constraints model [1]. The triple constraints, when planning a course, are period and point of time for each part of the course, cost of resources, and course content and scope for each part of the course. Course quality depends on how well these constraints are integrated; the

hard part is managing the triple constraints successfully while planning the course. The periods for each part of the course, for example milestones, have to be carried out at a

significant point in the project. Different stakeholders, for instance students, the director of studies, and the course secretary, will also have different requirements and expectations.

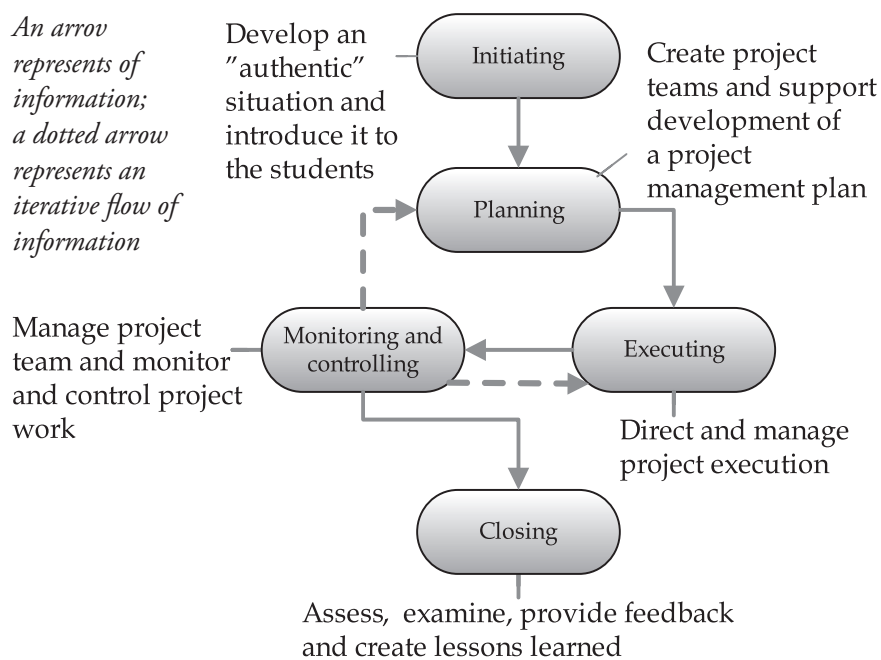


An overview of the triple constraints for a teacher is presented in figure 1.  
*Figure 1. Triple constraints for a teacher planning a project-oriented course*

### Implementing a project-oriented course

A project-oriented course can be divided into phases, the same phases as the project life cycle [11]. During the initiating phase the teacher develops an “authentic” situation and introduces it to the students. After that, the teacher creates the project teams [9] and supports development of a project management plan. Then the teacher directs and manages the project’s execution. During the monitoring

and controlling phase, the teacher manages the project teams and monitors and controls project work. Sometimes the teams have to repeat the planning and executing phases or the executing phase. During the closing phase, the teacher assesses, examines, provides feedback, and creates lessons learned. An overview of teacher activities related to implementing a project-oriented course is presented in figure 2.



*Figure 2. Teacher activities related to implementing a project-oriented course*

## Improved skills and learning for students

Project-oriented education contains skills training for the students. The students improve their skills while they work with the activities in the project during the course. These skills can be categorized into two parts, depending on the decisions made about what activity to do and how to do the activity. The first part, related to “what”, refers to skills about coor-

dination and decision-making. The second part, related to “how”, refers to skills about collaboration and communication [15].

Knowledge of the product of the project can be related to the course content and the scope for each part of the course. An overview of how project-oriented education improves the students’ skills and learning is presented in figure 3.

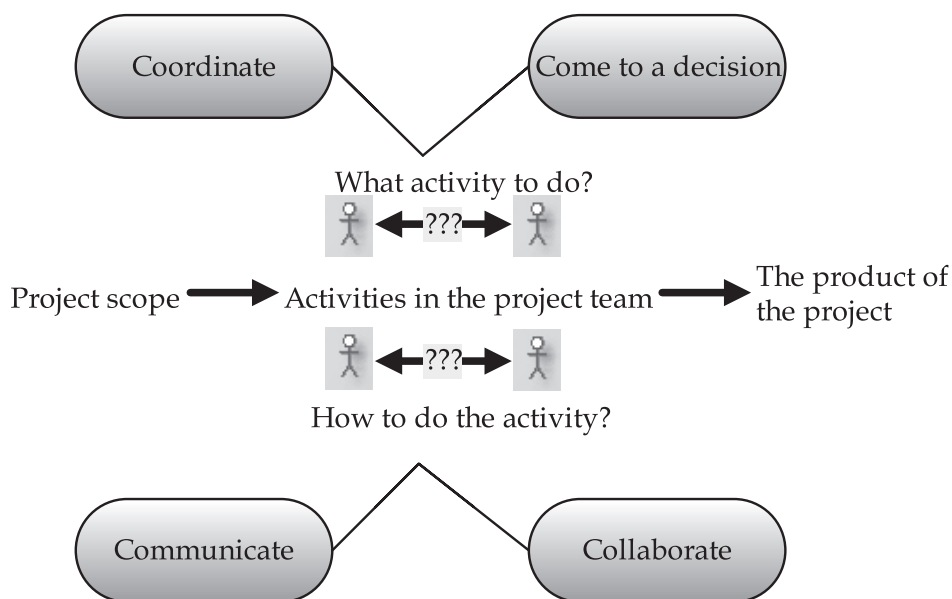


Figure 3. How project-oriented education improves students’ skills and learning

## CONCLUDING REMARKS AND FUTURE WORK

An attempt to present project-oriented education has been made in this paper. Future work will further develop and describe what project-oriented education is and how it could be applied in university education. A teachers’ manual about project oriented-education is also on the agenda.

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