

## Chapter 6

# The Change Towards PBL: Designing and Applying PBL at a Program Level

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### **ABSTRACT**

*This chapter proposes the design of course groups PBL at program level for students from the BSc. programs of Robot Engineering (RE) at Northeastern University (NEU), China. The overall courses are divided into four groups throughout Grades 1 to 4. In this chapter, the authors provide background information about student cultivation and discipline construction in RE, and then they discuss correlation of characteristics between PBL and RE program, which indicates the reasons for applying PBL in RE. Finally, they introduce the detailed design of course groups.*

DOI: 10.4018/978-1-5225-9961-6.ch006

## INTRODUCTION

### Chang to PBL

The institutions, such as McMaster, Maastricht, Aalborg, Roskilde, Linköping, and Newcastle, started PBL with a blank slate. These are young universities that were able to develop an entire curriculum without the burden of traditions and habits. This book addresses the much more complicated transformation process from traditional teaching and learning systems with ordinary lectures to PBL systems based on PBL learning principles including problem-based, team-based, interdisciplinary, and contextual learning.

The transformation from traditional to more student-centered learning is a widespread global process caused by new demands for process and lifelong learning skills. But even if this is a global process, each programme utilizing PBL principles has its history. In many cases, the shift to PBL was caused by more or less similar wishes:

- To decrease drop-out rates
- To stimulate motivation for learning
- To accentuate institutional profile
- To support the development of new competences

Change can be observed from many different angles. Some changes manifest at an institutional level when a faculty, a department, or a programme opts for a total curriculum change. In other cases, the subject is a single course sought infused with innovation by a teacher. This article deals primarily with the institutional change – the more holistic transformation of a system. These types of transformation processes are complex, and each institution that has undergone such a transformation process has a unique story to tell. However, these stories also share a lot of similarities, revealing a pattern for transformation processes in Higher Education.

Relating these terms to Higher Education, the product is not a tangible, material product, but the students' knowledge and competencies. In other words, it is about changing students' learning.

Fullan (2001) is one of the few educational researchers working with change in education at a practical level and at the same time contributing to the theoretical

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