

# Chapter 9

## Student–Centered Assessment Practices: An Integrated Approach With Project–Based Learning (PBL)

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### ABSTRACT

*This chapter aims to describe the assessment practices used in a PBL (project-based learning) approach, adopting an integrated view, where teaching, learning, and assessment are student-centered. It explores the assessment methods, moments and participants in the teaching and learning process. Assessment procedures, criteria, and tasks will be carefully presented, as well as the benefits and constraints which they entail. Based on the significant and consolidated experience acquired with the implementation of PBL, since the year 2005, in this context, along with the scientific research produced to continuously evaluate and improve this learning approach, authors will present guidelines for the successful implementation of student-centered assessment practices in the context of PBL approaches in higher education.*

### INTRODUCTION

Student-centred teaching, learning and assessment is at the heart of the Standards and Guidelines for Quality Assurance in the European Higher Education Area (2015). This framework calls attention to the importance of creating programmes that are delivered in a way that encourages students to take an active role in creating the learning process and that the assessment of students reflects this approach.

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Based on this assumption, new pedagogical approaches, which respect and attend to the diversity of students and their needs, are emerging in several higher education institutions. Project-based Learning (PBL) is one of those approaches. In PBL, students learn by actively engaging in real-world and personally meaningful projects. It provides an integrated approach of student-centred teaching, learning and assessment. PBL is aligned with most of the criteria defined the ESG (2015), as it: i) respects and attends to the diversity of students and their needs, enabling flexible learning paths; ii) considers and uses different modes of delivery, where appropriate; iii) flexibly uses a variety of pedagogical methods; iv) regularly evaluates and adjusts the modes of delivery and pedagogical methods; v) encourages a sense of autonomy in the learner, while ensuring adequate guidance and support from the teacher; and, vi) promotes mutual respect within the learner-teacher relationship.

Driven by the demands of the implementation of Bologna Process, which led to the transformation of educational practices and the implementation of active learning strategies and curriculum innovation, several higher education institutions in Portugal, such as the University of Minho, Portugal, engaged in a change process. The Integrated Masters degree in Industrial Engineering and Management (IEM) programme was one of the pioneer experiences of the adoption of PBL in the engineering curricula (Lima et al., 2007). A recent publication regarding the ten years of PBL at the IEM programme describes the challenges, opportunities and future perspectives and visions faced by teachers and researchers involved in this approach (Lima et al., 2017). Findings from research show that both students and teachers agree on the challenges concerned with the assessment process of students in these kind of approaches (Fernandes, Flores, & Lima, 2012a, 2012b; Fernandes, Mesquita, Flores, & Lima, 2014). Students, on the one hand, point out the constraints related to the individual assessment of each team member and the integration of contents from all courses in the project. On the other hand, teachers consider that their biggest difficulty is related to the development and assessment of student competences and the summative component of the project assessment (Alves et al., 2016a; Alves et al., 2016b; Alves et al., 2019).

This chapter aims to describe the assessment practices used in this PBL approach, adopting an integrated view, where teaching, learning and assessment are student-centred. It explores the assessment methods, moments and participants in the teaching and learning process. Assessment procedures, criteria and tasks will be carefully presented, as well as the benefits and constraints which they entail. Based on the significant and consolidated experience acquired with the implementation of PBL, since the year 2005, in this context, along with the scientific research produced to continuously evaluate and improve this learning approach, authors will present guidelines for the successful implementation of student-centred assessment practices in the context of PBL approaches in higher education.

This chapter is organized in five main sections. Following this first section that introduces the theme and objectives, the second section presents a brief review about student assessment in Higher Education. The third section outlines the definition and features of PBL, describing the context of the study succinctly, this is, the Industrial Engineering and Management first year, first semester PBL experience (IEM11\_PBL). Student assessment in this context, IEM11\_PBL, is explained, in detail, in the fourth section. Finally, the fifth section presents the conclusions and final remarks.

## **STUDENT ASSESSMENT IN HIGHER EDUCATION**

Assessment is a complex and polysemic concept. Everyone talks about assessment, but each one has different understandings about its meaning (Alvarez, 2001). Therefore, it is important to present a brief

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