**Problem-based learning PBL**

Problem-based learning (PBL) is a teaching-learning method based on the idea of using problems as the starting point of acquisition and integration of new knowledge (Walker, Leary, Hemlo-Silver, & Ertmer, 2015). This is not a new teaching method. Some claim that it is an updated version of the dialectic method which is attributed to Socrates and Plato and includes characteristics of inquiry-based learning based on Dewey’s experiential learning pedagogy. The goal of PBL is to place the learners at the centre of the teaching-learning-assessment activity and to give them full responsibility for their learning (De Loght & Van Petegem, 2003). The student becomes an independent learner who integrates experience with multidisciplinary knowledge acquisition, the learner is an active partner in the learning process, initiates it, and contributes to its content (Bauer, 2003).

Although there a number of models to applying PBL, several basic principles that characterise and define this approach are recognised (Walker & Leary, 2009): (1) Presenting the learners with an ill-structured problem that encourages them to think about possible reasons for it and various ways to solve it; (2) PBL is a learner-centred approach, in which the learners are partners in determining the learning needs. The learners identify the central elements of the presented problem, understand the gaps between the knowledge they have and the knowledge required to solve the problem, and acquire the missing knowledge to complete the task; (3) The teacher’s role is to guide the learning process. At first, the teacher guides the learners with meta-cognitive questions, but this diminishes with the progression of the process. Teachers can also provide lessons and content that focus on shaping the learning process, which the learners need to continue the task successfully; and (4) The problem must be authentic and connected to field-related praxis or to events that happen in the ‘real world’. These problems are by nature multidisciplinary, and the learners are expected to investigate many topics related to a variety of areas in order to reach a sustainable solution.