Assessment Methods for Service-Learning Projects in Engineering in Higher Education: A Systematic Review

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Service-learning (SL) helps engineering students to be involved in community activities and to be motivated by their studies. Although several reviews and research studies have been published about SL, it is not widespread in sciences and engineering at the university level. The purpose of this research is to analyze the different community services or projects where SL is implemented by engineering students and faculty and to identify the procedures that were usually implemented to assess SL-based courses and activities. Assessment could be considered as the evaluation of a specific module and the engineering competencies, the evaluation of the effectiveness of the SL program, the assessment of the participation of the student in those programs, and the assessment of whether students have achieved certain outcomes or gained specific skills. We conducted a systematic review with a search in three scientific databases: Scopus, Science Direct, and ERIC educational database to analyze the assessment methods and what that assessment covers. From 14,107 publications related to SL, 120 documents were analyzed to inform the conclusions of this study. We found that SL is widely used in several universities as experiential education, and it is considered an academic activity. The most widely used assessment technique is a survey to evaluate the engagement and attitudes of students and, to a lesser extent, teamwork presentations.

Keywords: service-learning, assessment, assessment tools, data collection, engineering, higher education

INTRODUCTION

Undergraduate students in engineering usually do not have the opportunity to develop their personal and social competencies and skills during their studies at the university level, except when they undertake practices in companies. Students will need a solid technical background as well as educational experiences that could help them to develop a sense of responsibility, self-efficacy, professional skills (e.g., leadership, communication, team-building, critical thinking skills, and sense of civic responsibility), and outside-of-the-classroom skills among fellow students and among the community (Oakes and Thompson, 2004; Dennis and Hall, 2007; McCormick et al., 2008; Finsterwalder et al., 2010). The limited use of different methodologies in university contexts is usually due to the lack of time of supervisors and sometimes the absence of knowledge of other