

## Chapter 12

# Virtual Learning Environments as a Continuous Assessment Tool in University Students

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### ABSTRACT

*This chapter presents the development of a virtual learning environment through the use of e-assessment based on web technologies. This virtual environment development consists in the use of Code Igniter developed by EllisLab. Bootstrap was also simultaneously used, which is a framework developed within Twitter, with the objective of standardizing the tools that are used in the development. This virtual environment allowed to assess and keep track of the work of a selected group of students from the Mechatronics Engineering academic program of the Universidad Politécnica de Sinaloa in Mexico, which, throughout the course, allowed teachers to manage the students' assessments. As a conclusion, it was found that the virtual learning environment using e-assessment contributes to the teacher-student interaction within a virtual environment and in an online modality. Finally, it was reported that time spans in different areas were optimized, such as the areas of elaboration, design, application, and feedback of the university students' assessment.*

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## **INTRODUCTION**

In the particular case of Universidad Politécnica de Sinaloa in Mexico, which will be the study population of this project, has had a considerable increment in educational programs and enrollment, increasing the number of registered students by approximately 300% between the periods of 2009-2010 and 2017-2018 (UPSIN, 2017). In the case of the Mechatronics Engineering program, the enrollment registered 654 students in the 2017-2018 period. Providing students more opportunities generated a high demand, which provoked a noticeable effect of overpopulation in groups, which implies that the teaching staff requires of more elements and teaching tools that optimize the management of the subject as well as the assessment process, furthermore, this also provokes that teachers focus more in discipline control (Rocha, 2017). The teacher-student interaction is limited due to the lack of communication and time to make individual assessments. Rocha (2017) mentions that classroom overpopulation might be a cause that students do not meet the expected objectives, as attention becomes disperse, there is a complete absence of concentration, and teachers reduce their motivation to apply new teaching strategies. In light of this problem, different authors have proposed distinct strategies that are based in the use of information and communication technologies (ICTs) to aid teachers with the activities related to students' assessment, such is the case of Akintoye et al. (2011), who propose the development of a web-based interactive information system that allows both, students and teachers, flexibility in academic interaction, giving the teacher the opportunity to publish activities or assignments, and allowing students to check, do, and send assignments as well as verify their grades afterwards. In turn, Armstrong et al. (2000), present the development of a personal computer-based application (PC) which gives feedback on assessment elements. The app provides the students with information of their classmates' achievement, plus it enables the capacity of giving detailed feedback in the different assessment stages. Likewise, Iram et al. (2011) develop an interactive and intuitive Virtual Learning Environment (VLE) which includes a diagnostic assessment, self-assessment, and summative assessment with the objective of contributing to the expected results of the learning processes that are oriented towards teachers and students.

Hence, this project proposes the development of a Virtual Learning Environment using e-assessment based on web technologies, which will have as its principal aim to aid the learning process by fostering that assessments and students' academic track can be continuously monitored during their academic training; this contributes to the management of assessments applied to students. With the use of VLE, teachers will be able to create and manage electronic assessments with different types of items to apply them via online. Students, on the other hand, will be able to do the tasks assigned by the teachers.

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