

Application and Evaluation of Teaching-Learning Guides Based on Swebok for the Requirements Engineering Area

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Abstract : The software industry requires highly-trained professionals, capable of developing the roles integrated in the cycle of software development. That is why a large part of the task is the responsibility of higher education institutions; often through a curriculum established to orientate the academic development of the students. It is so that nowadays there are different models that support proposals for the improvement of the curricula for the area of Software Engineering, such as ACM, IEEE, ABET, Swebok, of which the last stands out, given that it manages and organises the knowledge of Software Engineering and offers a vision of theoretical and practical aspects. Moreover, it has been applied by different universities in the pursuit of achieving coverage in delivering the different topics and increasing the professional quality of future graduates. This research presents the structure of teaching and learning guides from the objectives of training and methodological strategies immersed in the levels of learning of Bloom's taxonomy with which it is intended to improve the delivery of the topics in the area of Requirements Engineering. Said guides were implemented and validated in a course of Requirements Engineering of the Systems and Computer Engineering programme in the Universidad Pedagógica y Tecnológica de Colombia (Pedagogical and Technological University of Colombia) using a four stage methodology: definition of the evaluation model, implementation of the guides, guide evaluation, and analysis of the results. After the collection and analysis of the data, the results show that in six out of the seven topics proposed in the Swebok guide, the percentage of students who obtained total marks within the 'High grade' level, that is between 4.0 and 4.6 (on a scale of 0.0 to 5.0), was higher than the percentage of students who obtained marks within the 'Acceptable' range of 3.0 to 3.9. In 86% of the topics and the strategies proposed, the teaching and learning guides facilitated the comprehension, analysis, and articulation of the concepts and processes of the students. In addition, they mainly indicate that the guides strengthened the argumentative and interpretative competencies, while the remaining 14% denotes the need to reinforce the strategies regarding the propositive competence, given that it presented the lowest average.

Keywords : pedagogic guide, pedagogic strategies, requirements engineering, Swebok, teaching-learning process

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