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ADAPTING E-COURSES USING DATA MINING TECHNIQUES – PDCA APPROACH AND QUALITY SPIRAL

Abstract: *This paper presents an approach to adapting e-courses based on original PDCA (Plan, Do, Check, Act) platform and quality spiral. An algorithm for the adaptation of e-courses was proposed and implemented into the Moodle Learning Management System at the Faculty of Technical Sciences, Čačak. The approach is primarily based on improving LMS (Learning Management Systems) or e-learning systems through modifying the electronic structure of the courses by predicting the behaviour patterns of the users. The prediction of user behaviour patterns was done using data mining techniques. Future research will focus on modelling of excellence of continuous advancement of the original system based on the evaluation results carried out at the end of each PDCA cycle. Additionally, future work will aim at evaluating the effects of the system based on the achievements and positive feedback of the users.*

Keywords: *e-courses, adaptation, data mining, PDCA, spiral quality*

1. Introduction

The expansion of e-learning has resulted in increased usage and advancement of learning management systems. The need for individualisation of learning has imposed new demands on learning management systems and their adaptation to the individual users' needs. In order to determine the characteristics of users' online behaviour (hereafter 'behaviour patterns') it is necessary to analyse all previous users' activities within a particular course and to make decisions accordingly.

Virtual learning environments in the form of a learning management system are becoming

more prevalent in universities and provide a variety of features in the organization of the blended learning, but also in the implementation of all the classes online and through the facilitation of the process of lifelong learning. These systems have been recognized as a good pedagogical support for most of the activities that a student needs to carry out, with less effort, time and money, as well as the limitations of the approach. These systems provide many opportunities to work with students, and a variety of activities with the possibility of cooperation and verification of acquired knowledge through electronic tests. There are numerous commercial learning management systems Blackboard and WebCT. And there are free systems such as Moodle, Claroline and so on. One of the most popular free system is Moodle.

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