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# **Record of Undergraduates' Activities in Virtual Learning Environments**

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Abstract: Virtual learning environments (VLEs) have witnessed a high evolution, namely regarding their potentialities, the tools and the activities they provide. VLEs enable us to access large quantities of data resulting from both students and teachers' activities developed in those environments. Monitoring undergraduates' activities in VLEs is important as it allows us to showcase, in a structured way, a number of indicators which may be taken into account to understand the learning process more deeply and to propose improvements in the teaching and learning strategies as well as in the institution's virtual environment. Although VLEs provide several data sectorial statistics, they do not provide knowledge regarding the institution's evolution. Therefore, we consider the analysis of the activity logs in VLEs over a period of five years to be paramount. This paper focuses on the analysis of the activities developed by students in a virtual learning environment, from a sample of undergraduate students, approximately 7000 per year, over a period of five academic years, namely from 2009/2010 to 2013/2014. The main aims of this research work are to assess the evolution of activity logs in the virtual learning environment of a Portuguese public higher education institution, in order to fill possible gaps and to hold out the prospect of new forms of use of the environment. The results obtained from the data analysis show that overall, the number of accesses to the virtual learning environment increased over the five years under study. The most used tools were Resources, Messages and Assignments. The most frequent activities developed with these tools were respectively consulting information, sending messages and submitting assignments. The frequency of accesses to the virtual learning environment was characterized according to the number of accesses in the activity log. The data distribution was divided into five frequency categories named very low, low, moderate, high and very high, determined by the percentiles 20, 40, 60, 80 and 100, respectively. The study of activity logs of virtual learning environments is important not only because they provide real knowledge of the use that undergraduates make of these environments, but also because of the possibilities they create regarding the identification of a need for new pedagogical approaches or a reinforcement of previously consolidated approaches.

Keywords: virtual learning environment, activity logs, digital tools, digital contents, undergraduates

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