Flipped classroom as a mathematics learning space for students

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Abstract

In this communication the case study of the main pedagogical technique applied to a Mathematics course unit of a higher educational programme of technology, called flipped classroom [1], will be presented. This technique, in conjunction with others, in the context of the student-centered approach, enhances the significant learning of the course unit's syllabus. The typical passive attitude of the students in the classroom is reversed through learning activities in collaborative working group and knowledge levelling. These activities make it possible to achieve the learning objectives, as well as reinforce or develop the transversal skills of employment, such as autonomy, adaptability, cooperation, constructive criticism and time management. This pedagogical technique was applied in order to work on the specific learning objectives for each class in the context of mathematical content, optimizing the student's academic work time: outside of classes students use virtual resources (texts, videos and other interactive resources) provided by the teacher to learn and deepen the contents and to carry out training tests; during classes students consolidate the knowledge acquired through knowledge levelling activities and perform summative assessments. The teacher assumes the role of facilitator of the entire learning process, guiding students' training by managing the performance of suitable exercises, group activities, by clarifying doubts and by evaluations inside and outside the classes, using the support of an IT platform. The outcomes of the application of this pedagogical technique resulted in a reduction of the dropout rate and an increase in the course unit's success rate, compared to the two previous academic years in which the teacher-centered approach was used. This case study was presented at the 4th International Conference of the Portuguese Society for Engineering Education last year [2].

Keywords: flipped classroom, student-centered approach, active learning, engineering education.

References

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