



## **Improvement of sustainability in learning using a forum-based blended learning competition approach**

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The learning strategy of students is often well adapted to economic aspects and is aiming for best possible examination performances, especially. For this reason, teachers often detect a low level of learning sustainability within the learning concept of students, especially when trying to build on knowledge of earlier lectures or lecture courses. In order to improve sustainability of knowledge, a case study was carried out within the lecture course "Introduction into GNSS positioning" of the Geodetic Institute of the Karlsruhe Institute of Technology (Karlsruhe, Germany). The lecture course "Introduction into GNSS positioning" is a compulsory part of the Bachelor study course "Geodesy and Geoinformatics" and also a supplementary module of the Bachelor study course "Geophysics". Within the lecture course, basic knowledge and basic principles of Global Navigation Satellite Systems, like GPS, are imparted.

During the winter semester 2010/11 ten students visited this compulsory attendance lecture course. In addition to lectures, practical training, and field exercises, a forum-based competition was additionally included in the GNSS lecture course. Therefore, the forum feature of the learning management system ILIAS was used. According to the Bologna Declaration, a special focus of the innovative competition concept is on competence-related learning.

The developed eLearning-related competition concept supports and motivates the students to learn more sustainable. In addition, the students have to be creative and have to deal with GNSS factual knowledge in order to win the competition. Within the presentation, the didactical concept behind this enriched blended learning case study is discussed and the rules of the competition are presented in detail. During the semester, the motivation and the amount of effort (e.g., time requirement of learning and teaching) were examined regularly. These parameters are going to be discussed as well. The forum-based sustainability competition is an effective tool, which can contribute to an increased sustainability of students' learning. In addition, the developed sustainability competition concept can be easily transferred to other lecture courses, especially focusing on factual knowledge.