Analyzing the Cumulative Hierarchy of the Taxonomy of Learning Objectives in Flipped Classroom

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Abstract

The emergence of digital learning formats influences the planning and structuring of digital teaching. Especially in times of the Corona Pandemic, when many universities remain closed, new digital learning concepts are emerging that can be integrated into face-to-face teaching in future. In this context, old teaching formats are often revised and questioned. But while technology only determines the form of collaboration, the real quality of learning depends on cognitive trials that the teacher addresses to the students. To classify these trials, a teacher can use Bloom's revised taxonomy, which ranks Learning Objectives in a six-level order and assumes a cumulative hierarchy: achieving a required Learning Objective level includes all lower levels. Especially in blended learning scenarios, such as a Flipped Classroom, this theory can be used to develop the course structure and to form exam questions. However, the applicability of the cumulative hierarchy is controversial in the literature and is rarely analysed in blended learning courses. Our goal is therefore to verify the cumulative hierarchy in a Flipped Classroom Course and derive recommendations for action. Therefore, we use a quantitative written survey. Since the analysis is based on the students' perceptions, these are verified by correlation analysis with the actual exam results and the awareness of contents and activities. Afterwards, the cumulative hierarchy is tested by regression analysis of the different levels of Learning Objectives. As a result, it could be confirmed for all levels, but not always by direct but often by indirect influences of other levels.

Keywords: Cumulative Hierarchy, Blended Learning, Learning Objectives, Learning Concepts, Course Design