

Learning outcomes in higher education: the relations to students' satisfaction, motivation and engagement to learning

Abstract

The purpose of this study is to understand how outcome-based education in Estonian higher education is supporting students' learning after the reforms of the Bologna process. This study shows that most of the learning outcomes are formulated at the lower levels of Bloom's taxonomy of cognitive demand. Surprisingly none of the unit learning outcomes were specified on the highest level of cognitive demand. At the same time the analysis of student perceptions about their satisfaction, motivation and engagement with the eVALUate survey revealed that many of the students did not make the best use of their learning experiences and they did not think about how to learn effectively. Also evidence of a relationship between the learning outcome levels of cognitive demand and students' perceptions of their satisfaction, motivation and effective learning was found. These results suggest that the cognitive demand of learning outcomes should be higher for supporting student-centered learning.

Keywords: Learning outcomes, Bloom's taxonomy of cognitive demand, students' learning.

Theoretical framework

The landscape of higher education has changed rapidly in the recent decades due to the reforms carried out as a result of Bologna process. Outcome-based education (OBE) has been recognized as one of the key elements for improving the sustainable quality of higher education (Cedefop, 2009; Nygaard, Holtham, & Courtney, 2009). Therefore national legislations, quality frameworks, guidelines have been developed for implementing the principles of OBE and student-centered learning. In Estonia OBE has been compulsory since 2009; however there has been little research that would give feedback about how students experience learning in OBE, how OBE is practiced in a unit basis, is the system working effectively and fulfilling its aims.

OBE is a model of education that shapes the way developing, delivering, and documenting the teaching and learning experience in terms of the achievement of pre-determined learning outcomes (Spady, 1994). According to the Standard of Higher Education (2009) learning outcomes are knowledge, skills and attitudes acquired as a result of learning that are described at the minimum level. Teaching in an outcomes-based system is aimed to support students learning and the development of a clear focus on what is essential for learners to be able to know and do successfully (Spady, 2001; Rauhvargers et al. 2009). Therefore learning activities should be purposeful, useful and stimulating but not impossible (Killen, 2009). Learning outcomes should challenge students to be active, independent and intrinsically motivated learners (McDaniel et al. 2000). One of the concerns about the adoption of learning outcomes is that when they are written within a narrow framework it could limit students' learning and cause shortage of the intellectual challenge. Instead learning outcomes should be written with a focus on higher-order thinking and application skills (Kennedy, Hyland, & Ryan, 2007). In this case teachers might need more feedback, guidance and strategies to better implement the ideas behind OBE.

Bloom's taxonomy is frequently used for writing learning outcomes (Kennedy, Hyland, & Ryan, 2007). Bloom's taxonomy is a hierarchical framework for classifying what students are expected to learn as a result of instruction (Krathwohl, 2002). In this hierarchy, each level depends on the student's ability to

perform at the level(s) that are below it (Kennedy, Hyland, & Ryan, 2007). According to Bloom (1978) learning should be challenging and lead students to move up and achieve higher order levels of the taxonomy.

Previous research in Estonia has shown that higher education institutions are still in the transition phase of implementing OBE (Tammets, Pata, 2013; Pilli, Vanari, 2013; Kumpas-Lenk, Tucker, & Gupta, 2014; Udam, Seema, & Mattisen, 2015). It has emerged that teachers are facing difficulties with systematically planning the learning outcomes, activities and assessment methods for their units (Tammets, Pata, 2013; Pilli, Vanari, 2013). Although learning outcomes can be written in many levels the study by Tammets and Pata (2013) showed that knowledge related outcomes were central in the studied unit LO-s. The analysis of students' perceptions about the achievement of the intended learning outcomes has revealed that students are not engaged in their learning, they do not think about how to make the best use of their learning or reflect their learning experiences (Kumpas-Lenk, Tucker, & Gupta, 2014).

The aim of this study is to find out how learning outcomes in light of Bloom's taxonomy of cognitive demand support students' learning.

Research questions:

1. What level are unit learning outcomes formulated according to the cognitive demand of Bloom's taxonomy?
2. Is there a relationship between learning outcomes according to Bloom's taxonomy of cognitive demand and students' perceptions about their satisfaction, motivation and engagement?

Methods

This study is part of a larger investigation, where an Estonian version of a mixed method survey tool eVALUate (Kumpas-Lenk, Tucker, & Gupta, 2014) was used for gathering and reporting students' perceptions of their learning experiences. The survey was conducted from September 2012 until March 2013 and covered eight faculties from six higher education institutions in Estonia (three universities of applied sciences and three universities).

The data about the learning outcomes was gathered from 78 units (also called subject), that were central in the eVALUate survey. In total 380 bachelor level learning outcomes from unit outlines were analysed according to the revised Bloom's taxonomy of cognitive demand by Krathwohl (2002). A total of 3669 bachelor level students were invited to complete the eVALUate unit evaluation survey and 1329 survey submissions suitable for analysis were received. The sample size response rate was 36%. Altogether the unit evaluation survey consists of 13 items (Oliver, Tucker, Gupta, & Yeo, 2008). This study focuses on the following four items from the eVALUate instrument:

- a) I was motivated to achieve the learning outcomes in this unit.
- b) I prepare for the lectures and seminars in order to take the maximum use out of these.
- c) I thought about how to learn more effectively in this unit.
- d) Overall I am satisfied with this unit.

Data analysis

Descriptive statistics were used to describe the demographics of the sample. For understanding and systemizing the learning outcomes in unit outlines a deductive approach of content analysis was conducted (Elo, Kyngas, 2008) based on the Bloom's taxonomy of cognitive demand which helps to classify learning outcomes

into six main domains (1-Remember, 2-Understand, 3-Apply, 4-Analyse, 5-Evaluate, 6-Create).

An aggregated percentage agreement (percentage of responses with 'agree' or 'strongly agree') of the eVALUate items were calculated and analysed to find out students' perceptions about their satisfaction, motivation and engagement with their learning. The results of the analysis from the eVALUate items were extracted from the previous study by Kumpas-Lenk, Tucker and Gupta (2014).

For determining if the observed counts are different enough for associations a chi square goodness of fit test was conducted with the help of SPSS Statistics. The qualitative and quantitative data were gathered and analysed separately within the same timeframe, then the results of both of the data were triangulated and analysed together.

Expected findings and conclusions

The results of this study show that most of the learning outcomes are formulated on the lower levels of Bloom's taxonomy of cognitive demand almost half of the unit learning outcomes were described on the 3rd level (applying) of cognitive demand. None of the unit learning outcomes were described on the highest level (creating) of cognitive demand.

The analysis of the four items from the eVALUate survey show low agreement with the engagement questions. Many students did not make the best use of their learning experiences and they did not think about how they could have learned more effectively. Contrarily to these results students' perceptions about their motivation and satisfaction with the unit were high.

The analysis of the chi square test revealed that there is evidence of a relationship between the levels of learning outcomes according to Bloom's taxonomy of cognitive demand and a) students perceptions about their motivation to achieve the intended learning outcomes, also b) students perceptions about how they could learn more effectively in the studied unit; and c) students perceptions of their satisfaction with the unit. The analysis also revealed that there is no evidence that there is a relationship between the levels of learning outcomes according to Bloom's taxonomy of cognitive demand and students' perceptions about making the best use of the learning experiences in the studied unit.

This study confirmed the results from previous studies by Killen (2009), Kennedy, Hyland and Ryan (2007) which suggest that the learning outcomes should be written with a focus on higher-order thinking and application skills and the learning activities should challenge students' to make the best use of their learning experiences. The results of this study suggest that teachers' awareness of implementing the model of outcome-based education needs improvement.

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