Chapter 8
Students' Conceptions of Understanding and Its Assessment

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ABSTRACT

Understanding means different things to different people, influencing what and how students learn and teachers teach. Mainstream understanding of understanding has not progressed beyond the first level of constructivist learning and thinking, ie academic understanding. This study, based on 167 student narratives, presents two hitherto unknown conceptions of understanding matching more complex ways of knowing, understanding-in-relativism and understanding-in-supercomplexity requiring the development of more complex versions of constructive alignment. Students comment that multiple choice testing encourages learning focused on recall and recognition, while academic understanding is not assessed often and more complex forms of understanding are hardly assessed at all in higher education. However, if study success depends on assessments-of-learning that credit them for meaning oriented learning and deeper understanding, students will put in effort to succeed.

INTRODUCTION

"At the heart of teaching for understanding lies a very basic question: What is understanding? Ponder this query for a moment and you will realize that good answers are not obvious." David Perkins wrote this in 1993, shortly after Entwistle and Entwistle had observed that within research on students' deep level learning and the search for personal understanding, the concept of understanding itself had been "rather taken for granted" (1992, p. 3; 1997). Both quotes indicate that many – educational researchers and lay people alike – use the word 'understanding' often without checking whether their own interpretation, the meaning they themselves put into the concept, is shared by others. Indeed as of 2015, a

simple search in the literature on the keyword *understanding* will confirm what Newton, Newton and Oberski observed in 1998, namely that many sources on designing teaching for high quality learning, deep learning or understanding, still "assume that what students believe counts as understanding in a subject is the same as what their teacher believes" (p. 45) or that teachers themselves at least agree on what constitutes understanding. This chapter will demonstrate that both assumptions are untrue. On a daily basis, teachers are "faced with a diverse collection of conceptions on what is relevant to understanding" in their classroom (Newton & Newton, 1998, p. 351) affecting the outcome of their teaching because their students´ views on understanding are "likely to shape how and what they learn" (p. 341) determining the quality of the learning outcome (van Rossum & Schenk, 1984). At the same time, teachers' views on what constitutes good or deep learning and understanding influence what and how they teach, how they use teaching materials to shape the learning environment (van Rossum & Hamer, 2010) and how they assess and award student exam performance (Samuelowicz & Bain, 2002). In the end, the lack of understanding students' and teachers' conceptions of understanding and the possible clashes between them may well result in ineffective learning and/or teaching, compromising the benefit of education to graduates and society (Khiat, 2010).

The focus of learners in formal education on study success and passing exams makes assessment a powerful tool to influence student learning (Gibbs, 1999). Unfortunately it has proven more common that assessment shifts learners towards learning focusing on recall and reproduction than towards higher quality learning (e.g. Newble & Clarke, 1986). It remains difficult to design valid and reliable assessments fostering deep learning and understanding unless they are designed so that "students can show [deep understanding] and *gain credit for it*" (Newton & Newton, 1998, p. 356, emphasis added). In this chapter the views of students are presented on what constitutes understanding and what they feel is an appropriate assessment model that would credit them for *learning for understanding*.

Evidently, in order to credit students for understanding, assessment tasks need to be designed that enable students to demonstrate the different levels of understanding, whilst corresponding rubrics, criteria and mark schemes would need be written that clearly describe the desired levels of deep understanding indicating what credit is to be awarded for the different levels of understanding shown. This chapter provides empirical evidence of a range of qualitatively different perceptions of deep understanding in cognitive learning that exist in the minds of learners and teachers. These perceptions or conceptions of understanding form a hierarchical taxonomy with at least two conceptions of understanding beyond what is currently assumed (e.g. Bloom's taxonomy and improvements thereon). The presented taxonomy of understanding will support the formulation of a hierarchy of desired (or expected) learning outcomes within criteria or mark schemes that potentially better reflect the full range student performances possible. The creation of such hierarchies of expected learning outcomes forms the heart of the curriculum and assessment design principle of constructive alignment (Biggs, 2003). In constructive alignment, the levels in the hierarchy of desired or expected outcomes are interpreted as different learning outcomes. Using the distinct levels of learning outcome in the hierarchy, teaching, learning and assessment activities can be chosen that align with each level. If implemented successfully, constructive alignment can be used to shape learning, teaching and indeed assessment activities, both formative as well as summative, aimed at the different levels of understanding and so create a learning path towards the more complex forms of deep understanding.

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