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**Abstract**

A test of core knowledge within a health sciences topic was developed and validated using the partial credit model of Rasch analysis (Masters 1982). The SOLO Taxonomy (Biggs and Collis 1982) was used as the theoretical basis to determine speech pathology students' depth of understanding of key features of a complex physiological process (swallowing) as depicted in their written descriptions. Rasch analysis revealed those features that fitted the empirical model and those that needed to be revised or discarded. Students' mastery of the retained features was used to calibrate scaled scores that could be employed for a variety of comparative purposes. This study provides evidence that use of the SOLO Taxonomy can be extended to provide precise and reliable quantitative scores. Consequently valid tests of student knowledge in a range of distinct topic areas can be designed to reflect both the quality of student learning as well as its quantity, a feature that offers potential for assessment in general. (HRK / Abstract übernommen)