This book presents a series of papers that examine the area of cognitive modeling in assessment with a particular emphasis on standard setting. These papers present the most up to date information on modeling student learning using multivariate IRT models, progress variable mapping, value-based approaches, content trajectories, on line tutoring records, and vertically articulated performance standards.

The No Child Left Behind (NCLB) legislation has encouraged a keen interest in standard setting. At the same time, there has been a steady increase in the use of cognitive models to understand student performance. These models are being used to characterize the patterns of problem solving that a student utilizes to solve the test items with which he or she is faced in an assessment. This book combines these two interests in a way that gives the reader an overview of the current literature as well as the issues that remain unresolved. This book helps one to understand the standard setting problem as one of characterizing the expert student’s problem solving strategies and differentiating these strategies from those used by the inexpert student. The result is a view of standard setting and student progress that takes on a very different appearance from that traditionally used in psychometrics.

This book is based on the very well received conference of the same name held on the University of Maryland Campus on October 19 and 20, 2006.

The titles and authors of the eleven chapters are as follows:

  *A Prospective, Progressive, and Predictive Approach to Standard Setting*

- Steve Ferrara, Gary W. Phillips, Paul L. Williams, Steven Leinwand, Shannon Mahoney, and Stephan Ahad, American Institutes for Research
  *Vertically Articulated Performance Standards: An Exploratory Study of Inferences about Achievement and Growth*

- Brian W. Junker, Carnegie Mellon University
  *Using On-line Tutoring Records to Predict End-of-Year Exam Scores: Experience with the ASSISTm ents Project and MCAS 8th Grade Mathematics*

- Joseph A. Martineau, Michigan Department of Education; Dipendra Raj Subedi, Michigan State University; Kyle H. Ward, Michigan Department of Education; Tianli Li, Yang Lu, Qi Dao, Feng-Hsien Pang, Samuel Drake, Tian Song, Shu-Chuan Kao, Yan Zheng, and Xin Li, Michigan State University
  *Non-Linear Unidimensional Scale Trajectories through Multidimensional Content Spaces: A Critical Examination of the Common Psychometric Claims of Unidimensionality, Linearity, and Interval-Level Measurement*
• Marty McCall, and Carl Hauser, Northwest Evaluation Association
  Item Response Theory and Longitudinal Modeling: The Real World is Less Complicated than We Fear
• Christopher A. Correa, and Kevin F. Miller, University of Michigan
  A Culture of Remembering: Contexts of Mathematical Development and their Implications for Assessment and Standard-Setting
• Mark D. Reckase, Michigan State University, and Tianli Li, ACT, Inc.
  Estimating Gain in Achievement when Content Specifications Change: A Multidimensional Item Response Theory Approach
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  Implementing Cognition-Based Learning Goals in Classrooms: The State Role
• Ron Stevens, IMMEX Project, UCLA
  A Value-Based Approach for Quantifying Student’s Scientific Problem Solving Efficiency and Effectiveness Within and Across Educational Systems
• Dylan Wiliam, Institute of Education, University of London
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