Introduction

The Common Core State Standards and easyCBM® in 2010, the Common Core State Standards (CCSS) for Mathematics were released to provide a unified set of expectations for developing mathematics knowledge and skills for grades K-12 (NGA and CCSSO, 2010). Currently, 47 states and the District of Columbia have formally adopted the CCSS through one or both of two assessment consortia working with states to implement the standards, with the impending release of the Common Assessments. Math items comprising the easyCBM® formative assessment system were originally written to align with the National Council of Teachers of Mathematics Curriculum Focal Points (NCTM, 2006). Recently, researchers found a reasonable pattern of alignment between K-5 math items and the CCSS, though not without areas of concern. For example, Irvin, Park, Alonzo and Tindal (2012) suggested some K-2 CCSS were underrepresented by easyCBM® assessments – finding similar patterns for grades 3-5. Given the movement of educators toward the CCSS, assessment development within the easyCBM® system must focus on writing new items to address those standards currently underrepresented within existing K-5 measures.

The Importance of Aligned Formative Assessments

Within the current U.S. standards-based accountability system, academic standards inform both instructional and assessment practices. While researchers have studied the alignment of summative state tests to adopted standards (Webb, 1999), research around the alignment of formative assessments to such standards is lacking, though perhaps not justifiably. Within a response to intervention (RTI) framework, formative assessments (i.e., interim benchmarking and progress monitoring measures) are administered over the course of an academic year to track student progress toward grade-level expectations, guiding instruction and aiding in the identification of students in need of instructional intervention and special education services.

Design Option Conceptual Models

In the Trainer-Trainee design option Lead Reviewers are recruited and trained by the lead researcher in person. The Lead Reviewer recruits and trains four grade-level Item Writers. Item Writers each produce a total of 125 grade level items that are reviewed and edited by the Lead Reviewer, prior to whole-group reviews by the lead researcher’s in-house review team. This item writing and review design option is adapted from the work of Anderson, Irvin, Patapiphytahalam, Alonzo and Tindal (2012), whose research resulted in easyCBM® CCSS-aligned middle school math items in fall 2012.

In this light, formative assessment can be thought of as an integrated and ongoing process within the standards-based instructional cycle (picture above) of gathering student-level information as a basis for valid instructional decision-making. Thus, academic standards and formative assessments must be strongly aligned for teachers to make valid test-based inferences and appropriate instructional decisions led to student needs.

Design Option Resource Considerations

In what follows, two alternative study design options for writing, reviewing and scaling 3,000 new K-5 easyCBM® CCSS-aligned math items by fall 2013 are explored. Based largely on budget and control advantages a streamlined Trainer-Trainee option is recommended.

Design Options: Relative Strength and Weaknesses

Justification for Design Option Choice

The two study design options have relative advantages and disadvantages when compared to each other. An overarching benefit is that both designs have produced quality math items for the easyCBM® formative assessment (Alonzo and Tindal, 2009; Anderson, Irvin, Alonzo and Tindal, 2012); thus, both designs likely allow the researcher achieve study goals. Despite greater demands around time and training placed over participant recruitment and monitoring are added benefits that may yield higher quality items at the advent of in-house reviews.

References


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