

## EdReports Evaluation of *Connected Mathematics* Alignment with Common Core State Standards for Mathematics

### A Reply from *CMP3* Authors

The EdReports evaluation of instructional materials for Grades 6 – 8 developed by the Connected Mathematics Project and published by Pearson concludes that those materials, “do not meet the requirements for alignment to the Common Core State Standards.” However, as authors of *CMP3* we believe this conclusion is based on inappropriate interpretations of the CCSSM and on inaccurate analyses of the *CMP3* instructional materials. We believe that reconsideration of the analysis and evaluation would lead to a different conclusion—that *CMP3* is in fact well aligned with the CCSSM and, when used as designed, can lead to strong student achievement of the CCSSM objectives.

While we could challenge many specific critical statements about alignment of *CMP3* courses and the CCSSM, it is probably more helpful to explain our concerns about several common themes that seem to have led to the judgment of misalignment.

#### **1. The most frequent complaint of EdReports reviewers is that *CMP3* materials fail to adequately focus on the major work for each grade level.**

Each grade level statement of the CCSSM identifies several content domains and the mathematical practices that should be critical areas for instruction. When two national consortia (PARCC and Smarter Balanced) began designing new tests that would assess student achievement of the CCSSM, they chose to focus on a much smaller set of specific content standards<sup>1</sup> and to essentially ignore the mathematical practice standards. The assessment consortia describe their focal points for testing as ‘major work’ topics.

In judging that *Connected Mathematics* courses do not meet expectations for alignment with Common Core State Standards, EdReport reviewers appear to have faulted *CMP3* for not adequately concentrating its instructional materials on ‘major work’ topics identified by the assessment consortia. However, in our judgment it is the narrow test specifications that are not well aligned with the CCSSM. We believe that if *CMP3* instructional materials are evaluated according to their coverage of the critical content areas and mathematical practices described in CCSSM documents, they will be found to be closely aligned with the Common Core expectations.

Even if one accepts the EdReports criterion of predominant emphasis on the assessment consortia’s ‘major work’ topics, we believe that accurate analysis of *CMP3* instructional materials would lead to the conclusion that they are well aligned to CCSSM. To fairly and accurately evaluate content coverage in problem-based instructional materials like those of *CMP3* it is essential to look carefully at the mathematical content of each problem and the interconnections between problems, units, and courses. When the collections of *CMP3* units for each middle school grade course are evaluated with this kind of care, one will find that major work topics are more than adequately addressed.

#### **2. A second recurrent theme in criticism of *CMP3* alignment with CCSSM is a claim that the curriculum includes some above grade level topics and that in some cases student understanding of those topics is assessed by quizzes and unit tests.**

There are at least four solid reasons for objecting to this standard for alignment and the way it has been applied by EdReport evaluators:

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<sup>1</sup> Notably moving most geometry, measurement, statistics, and probability standards into a category described as “additional or supporting clusters or others.”

First, nothing in any CCSSM document says that the listed objectives are to be considered restrictive upper bounds for what schools might include in their courses for grades 6, 7, and 8. In fact, early presentations about the CCSSM suggested that listed content objectives should be considered as specifying only 85% of each year's full curriculum. Furthermore, we believe it makes good pedagogical sense to give students early informal introductions to big ideas like percent, similarity, and functions—all *CMP3* topics that EdReports criticized as being out of alignment with CCSSM.

Second, documents describing the CCSSM are quite explicit in saying they do not prescribe curricula or instruction, only learning goals for students. In *CMP3* when some topics are introduced prior to their prescribed grade placement in CCSSM, there is strong pedagogical justification. For example, EdReports evaluators criticized a seventh grade unit of *CMP3* that touches on similarity, arguing that this is a topic reserved by the CCSSM for grade eight. In fact, the CCSSM call for seventh grade work on scale drawing—a topic that is fundamentally about similarity of figures. The mistake of *CMP3* authors appears to have been in using an appropriate mathematical term to talk about the topic.

But there is an even stronger rationale for introducing similarity in grade seven. The *Stretching and Shrinking* unit is included in *CMP3* materials because extensive experience from prior research and development work has shown that similarity is a powerful visual representation and application of ratios and proportions. So *CMP3* introduces the geometric topic as much to enhance teaching of proportional reasoning as to develop early understanding of similarity. This supposedly premature introduction of similarity also pays dividends in subsequent units on measurement—the effect of proportional scaling on perimeters, areas, and volumes is an extremely important overarching measurement idea.

Third, the EdReports evaluators made a number of critical remarks about high school standards that are addressed in the *CMP3* grade eight materials. But *CMP3* materials for grade eight have been explicitly designed and developed to include all topics necessary to meet the CCSSM for regular eighth grade mathematics and for Algebra I, so that schools and teachers who want to use *CMP3* materials for an Algebra I course can do so. For students focused only on standards for eighth grade mathematics, the extra text material is clearly marked and can be omitted.

Finally, if a topic happens to be used in *CMP3* prior to its official grade level placement in CCSSM, it seems most appropriate to include some test items on the topic as part of classroom formative assessment. The assessments given on a day to day basis by classroom teachers should not be constrained by the specifications of high stakes national tests like PARCC and SBAC. Furthermore, the number of such 'out of grade' test items in *CMP3* is truly very small.

**3. Our third broad area of concern about the EdReports evaluation of *CMP3* is the frequent inconsistency between rating numbers and evaluators' evidence supporting those ratings.**

On the very first page of the report we find the statement, "The reviewers evaluated the materials to be strong in their detail to connections among math concepts. With minor changes to assess only the grade level appropriate standards, the program would meet the expectations for focus." Yet the summary judgment of the program is that it "does not meet (alignment) expectations."

On page eight in the EdReports evaluation there is an extensive citation of ways that the *CMP3* materials are consistent with grade-by-grade progressions in the *Standards*, with only some reservations about the adequacy of provision for differentiation of instruction. Yet the score awarded on this criterion is apparently only 50%, 1 of 2 possible points.

On page 21 at the beginning of the Grade 8 evaluation we find this curious paragraph:

“The instructional materials reviewed for Grade 8 do not meet the requirements for alignment to the standards. The materials devote the majority of class time to the major work for Grade 8. The materials are coherent and consistent with CCSSM. There are explicit connections between major clusters. The supporting work is used to enhance the major clusters. The materials have some assessment items that go beyond the Grade 8 standards. The support for differentiation of instruction could be more explicit to help teachers in their daily work.”

Apparently *CMP3* materials at this grade level do have focus and coherence, but because they offer some assessment items that go beyond grade level (for reasons explained in item (2) above) and because the support for differentiation could be more explicit, the course failed the alignment test and was not reviewed further for rigor and mathematical practices.

The *Connected Mathematics* curriculum design, text materials for students, and supporting resources for teachers have been progressively refined over a period of 25 years with advice and contributions from master teachers, curriculum developers, mathematicians, and mathematics education researchers and with feedback from experiences of millions of middle grades students in thousands of classrooms. Results of extensive research into use of *Connected Mathematics* show consistent positive effects on student conceptual understanding and problem solving ability without sacrificing achievement in traditional factual knowledge and skills.<sup>2</sup>

The current third edition of *Connected Mathematics* has been carefully constructed to reflect new expectations of the full set of Common Core State Standards for Mathematics. We believe the proven record of *Connected Mathematics* and the three major areas of concern elaborated above raise serious doubts about validity of the ‘does not meet expectations’ judgment in the EdReports evaluation of *CMP3* and that reconsideration of the evaluation is in order.

Instead of superficial checks to see whether *Connected Mathematics* instructional materials and those of other authors and publishers focus on a narrow sample of Common Core State Standards and present them in rigidly defined grade level boxes, the EdReports reviewers should have been asking whether the those educational resources provide proven high quality support for teaching and learning in the full range of CCSSM with minimal extraneous content.

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<sup>2</sup> Extensive reviews of this research and other information about the *Connected Mathematics Project* can be accessed at the project web site [connectedmath.msu.edu](http://connectedmath.msu.edu), the Wikipedia article at [http://en.wikipedia.org/wiki/Connected\\_Mathematics](http://en.wikipedia.org/wiki/Connected_Mathematics), and the publisher web site <http://www.pearsonschool.com>