NCSM-NCTM-Curriculum Materials Analysis Tools

Tool 1: Content Analysis

Purpose:

- Analyze the extent to which the content (i.e., concepts, skills, applications) is treated in the materials as described in CCSSM.
- Determine the extent to which CCSS are sequenced appropriately in the materials
- Determine the extent to which the materials provide a balanced treatment of the CCSS in terms of conceptual development and procedural fluency.

1A. Content Coverage/Treatment Rubric:	**Key Evidence and Where to Find It!**	**Look Fors:**
In the rubric below, "gap" refers to IF, WHERE, and HOW content is treated in the materials. **Not Found (N)** - The mathematics content was not found. **Low (L)** - Major gaps in the mathematics content were found. **Marginal (M)** - Gaps in the content, as described in the Standards, were found and these gaps may not be easily filled. **Acceptable (A)** - Few gaps in the content, as described in the Standards, were found and these gaps may be easily filled. **High (H)** - The content was fully formed as described in the standards	• Base this analysis on lessons as presented in the student and teachers' editions, since these determine students' core instructional experiences. • This analysis addresses IF, WHERE, and HOW content is treated in the materials. Examining whether content is included is insufficient to determine whether students will have the opportunity to learn content as specified in CCSSM. • This analysis must be done not only within grades, but across grades to determine whether the materials adequately address and connect the mathematical ideas as they develop within and across grades, as described in the standards. (The complete the *CCSS Curriculum Materials Analysis Toolkit* contains grade-band analysis sheets for specific CCSS content domains.) • For High School – in addition reviewers will need to explore and understand the author's rationale for distributing content into and cross the three HS courses. Noting particularly *focus* - extensive course level experiences without re-teaching, and *coherence* - building on prior knowledge from within and across courses.	Content development is focused, coherent, and rigorous: 1. **CCSS Content:** CCSS Content Standards for the grade range are thoroughly developed 2. **Focus:** Content present respects the foci and learning progressions built into CCSS grade level standards, so that the content present outside this is limited to: connecting to prior knowledge without re-teaching, and previewing future content without expecting proficiency. 3. **Mathematical Range:** In major topics, lessons pursue conceptual understanding, procedural skill, and fluency, and application 4. **Representations:** Types and range of representations, sequence of representations, and the use of critical representations as identified in the CCSSM 5. **Connections:** Degree to which lessons support students in making connections among related mathematical concepts and algorithms as described in CCSSM. (E.g., Content cluster heads that begin with "Extend and apply . . . . ")

Summary Questions—Content Coverage/Treatment

1. Have you identified gaps within this domain? What are they? If so, can these gaps be realistically addressed through supplementation?
2. Within grade levels, do the curriculum materials provide sufficient experiences to support student learning within this standard?
3. Within this domain, is the treatment of the content across grade levels consistent with the progression within the Standards?

Tool 1: Content Analysis

1B. Balance of Mathematical Understanding & Procedural Skills Rubric	Key Evidence and Where to Find It!	Look Fors:
Not Found (N) - The content was not found. **Low (L)** - The content was not developed or developed superficially. **Marginal (M)** - The content was found and focused primarily on procedural skills and minimally on mathematical understanding, or ignored procedural skills. **Acceptable (A)** - The content was developed with a balance of mathematical understanding and procedural skills consistent with the Standards, but the connections between the two were not developed. **High (H)-**The content was developed with a balance of mathematical understanding and procedural skills consistent with the Standards, and the connections between the two were developed.	***Conceptual Understanding*** – comprehension of mathematical concepts, operations, and relations. **"*Understand"*** means that students can explain the concept with mathematical reasoning including concrete illustrations, mathematical representations, and example applications. ***Procedural Fluency*** – skill in carrying out procedures flexibly, accurately, efficiently, and appropriately.	1. **Procedures from Concepts:** Activities designed to develop conceptual understanding are leveraged and explicitly connected to the development of related procedures and algorithms 2. **Task Range:** Tasks are designed and sequenced so that students are ask to work across the full range of cognitive demand levels Opportunities for students to: 3. **Model:** Use concepts to make sense of and explain quantitative situations ("Model with mathematics") 4. **Reason:** Incorporate concepts into their own arguments and use them to evaluate the arguments of others (see "Construct viable arguments and critique the reasoning of others") 5. **Problem Solve:** Bring them to bear on the solutions to problems (see "Make sense of problems and persevere in solving them") 6. **Connect:** Make connections between related concepts

Summary Questions: Balance between Mathematical Understanding and Procedural Skills:

1. Do the curriculum materials support the development of students' mathematical understanding?
2. Do the curriculum materials support the development of students' proficiency with procedural skills?
3. Do the curriculum materials assist students in building connections between mathematical understanding and procedural skills?
4. To what extent do the curriculum materials provide a balanced focus on mathematical understanding and procedural skills?
5. Do student activities build on each other within and across grades in a logical way that supports mathematical understanding and procedural skills?

Overall Impressions:

1. What are your overall impressions of the curriculum materials examined?
2. What are the strengths and weaknesses of the materials you examined?

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