An international context

CAMBRIDGE ASSESSMENT

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High-quality textbooks in Mathematics an international context

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TRIBAL

UCL Institute of Education

MEI Innovators in Mathematics Education

Science Learning Centres

National STEM Centre

myscience

Background

National Centre for Excellence in the Teaching of Mathematics

- Informal review of primary mathematics textbooks in England on behalf of the DfE
- Textbook Project – evaluation of the use of Singapore textbooks in Year 1 and 2
- Attended the international mathematics textbook conference 2014
- England China Exchange Programme September 2014
- Publication of NCETM textbook guidance January 2015

https://www.ncetm.org.uk/files/21383193/NCETM+Textbook+Guidance.pdf

Mathematical coherence

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Mathematical coherence, both within and across textbook material, is essential in order for mathematical ideas to be connected, so that pupils achieve depth of understanding and make the logical connections necessary in order to progress.

(NCETM Textbook Guidance January 2015)

Conceptually focused, not solely instructionally focused

Highlighting key mathematical structures

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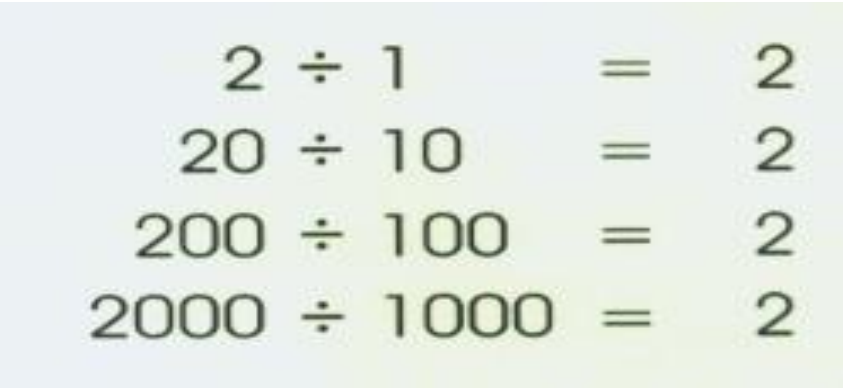

Shanghai Textbook Grade 4

$0.2 \div 0.1 = 2 \div 1 = 2$

Worthwhile tasks and exercises deepen conceptual understanding and embed procedural fluency.

(NCETM Textbook Guidance 2015)

Comparative Research – China and the USA

Sun, X. (2011) “Variation problems” and their roles in the topic of fraction division in Chinese mathematics textbook examples. *Educational Studies in Mathematics. 76. 65 – 85.*

Representing the mathematics

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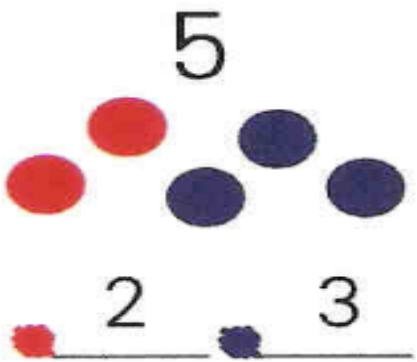

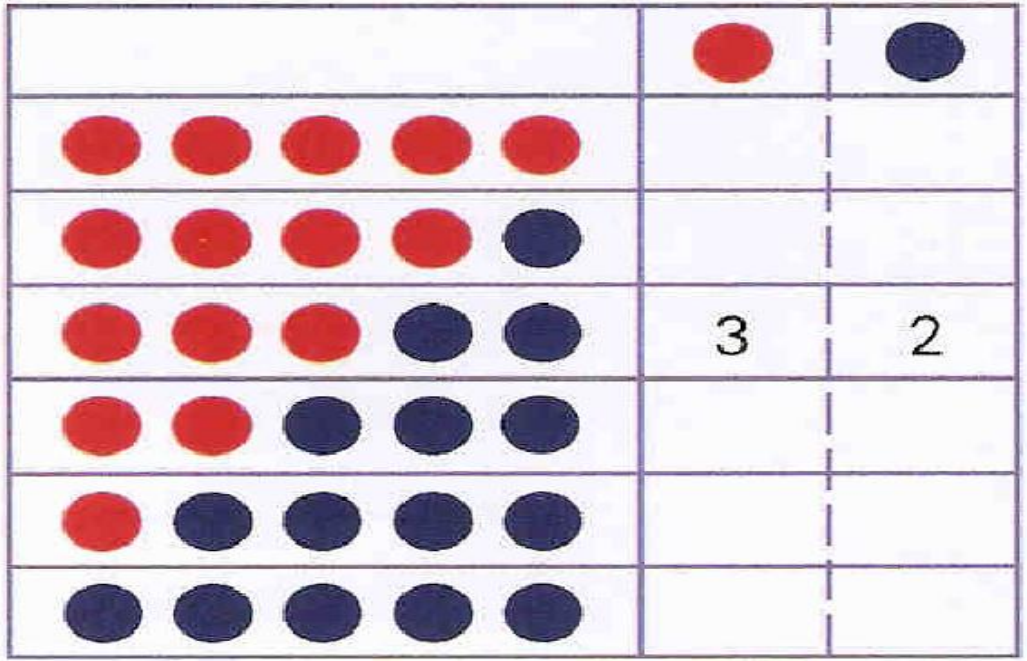

Shanghai Textbook Grade 1 Semester 1

Practice makes perfect?
Intelligent practice

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In designing [these] exercises, the teacher is advised to avoid mechanical repetition and to create an appropriate path for practising the thinking process with increasing creativity.

Gu, 1991

2 x 3 =	6 x 7 =
2 x 30 =	6 x 70 =
2 x 300 =	6 x 700 =
20 x 3 =	60 x 7 =
200 x 3 =	600 x 7 =

Making Connections Supports Deep Learning

Teacher professional development

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The textbook should be educative for teachers as well as pupils. It should support teachers' ongoing development of their subject knowledge and their pedagogical practice.

Teachers should understand the design of the textbook and insight into why particular tasks have been included

Interim evaluation of the textbook project

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- Developed teacher subject knowledge and pedagogy
- Freed up teacher time in the gathering of ideas for teaching
- Provided a more coherent learning journey

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