

Elementary Sorting Activity

Matrix of Features Exemplified by Each Task by Category

The purpose of this matrix is to provide a set of counter-examples to assumptions made regarding the categorization of the cognitive level of a task based on surface features of the task.

Features of Tasks	Memorization		Procedures without Connections				Procedures with Connections					Doing Mathematics				
	E	L	A	D	G	O	F	I	K	M	P	B	C	H	J	N
uses manipulatives			•					•	•		•					•
uses calculator					•							•				
uses a diagram			•	•			•			•				•		
has "real world" context				•					•	•			•	•	•	•
is symbolic/abstract	•	•			•	•	•	•			•	•	•			
involves multiple steps, actions, or judgments						•		•		•	•	•	•	•		•
requires an explanation						•		•	•		•	•		•	•	•
is "textbook like"	•	•		•	•		•		•							•

Smith, M. S., Stein, M. K., Arbaugh, F., Brown, C., & Mossgrove, J. (2004). Characterizing the cognitive demands of mathematical tasks: A task sorting activity. In G. Bright & R. Rubenstein (Eds.), Professional development guidebook for perspectives on teaching of mathematics: Companion to the sixty-sixth yearbook (pp. 45-72). Reston, VA: National Council of Teachers of Mathematics.

Elementary Reviewing Student Activity

Levels of Cognitive Demand Task as Designed v. Task as Implemented

The purpose of this matrix is to provide the answer key to this activity. The answers were normed by the authors based on the features of the task (as Designed) and the evidence in the student responses (as Implemented).

Task Titles	Grade	Level as Designed	Level as Implemented
Use Repeated Addition to Solve & On My Own (4 pages)	1	2	2
Grid Multiplication (3 pages)	4	2	2
3.OA.3 Word Problem (4 pages)	3	3	3
Problem of the Month (Tri – Triangles) (6 pages)	3	4	2
Two Ways to Make 50 Cents: Second Grade (2 pages)	2	4	4
Multiplication Number Sentences: Grade 5 (2 pages)	5	4	4