

Slow down you move too fast!

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CONTEXT

Combinatorics,
6-year-olds,
preschool class, Sweden

In how many ways can
three bears sit on a sofa?

FOCUS

Links between representations and solutions
Framework: Heddens, 1986

Concrete

(real bears)

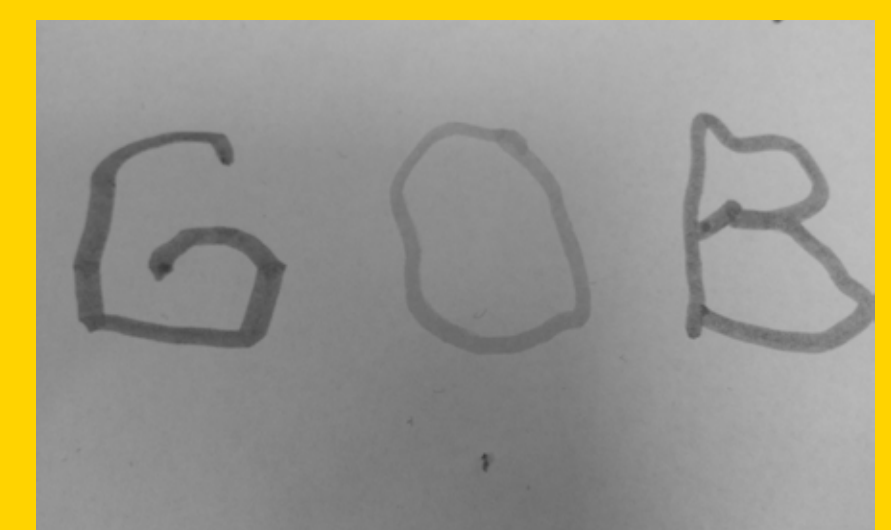
Semi-Concrete



Semi-Abstract



Abstract



FIRST PHASE – PAPER AND PENCIL

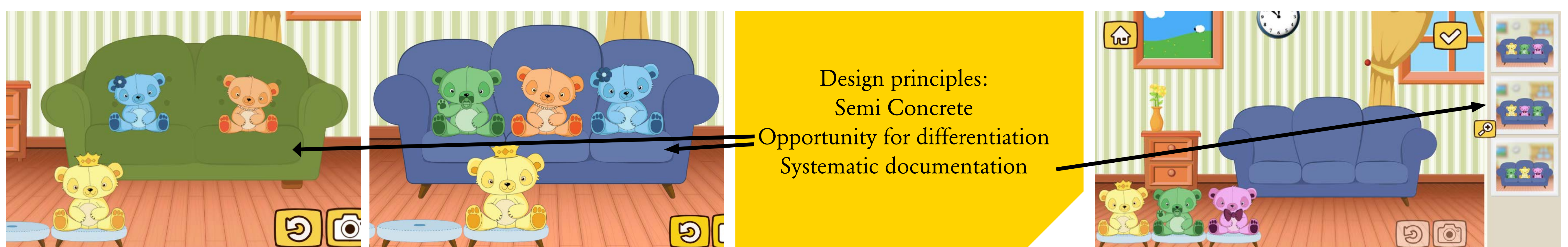
	SEMI-CONCRETE	SEMI-CONCRETE & SEMI-ABSTRACT	SEMI ABSTRACT
NO NEW PERMUTATIONS	3		2
SOME UNIQUE PERMUTATIONS	15	8	24
ALL UNIQUE PERMUTATIONS			2
DUPLICATE PERMUTATIONS	3		30
TOTAL	21	8	58

AIM

PROBLEM

Exploring the richness of the semi-concrete phase: Can we diminish the number of duplicate permutations in the abstract phase, when ‘forcing’ children to work in the semi-concrete phase?

SECOND PHASE – PAPER AND PENCIL IN COMBINATION WITH DIGITAL BEARS



application can be downloaded from:
<https://combibears.hotell.kau.se/#/>

PRELIMINARY RESULTS

Fewer duplications in semi-abstract level, when returning to paper and pencil
Increase in the systematic way they organise and search for solutions

New content in discussion: for example on similarities between two and three bears on a three-seat-sofa

REFERENCES

Heddens, J.W. (1986). Bridging the gap between the concrete and the abstract. *The Arithmetic Teacher*, 33(6), 14-17.

Palmér, H. & van Bommel, J. (in press). Exploring the role of representations when young children solve a combinatorial task. Paper presented at the MADIF10-Conference in Karlstad, Sweden.