

Approach: One to one

Year: 4 & 8

Focus: Friction

Resources: Wooden board, long rubber band, wooden block

Questions / instructions:

Preparation: Stretch the rubber band between the two wooden anchors on the wooden board.

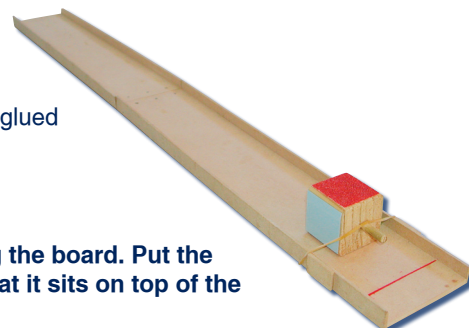
Show the student the wooden block.

If you turn the wooden block over you will see that there are three different materials glued to three sides of it. It has sides that are wood, plastic, flannel and sandpaper.

Show wooden block.

I'll show you how this works with the wood touching the board.

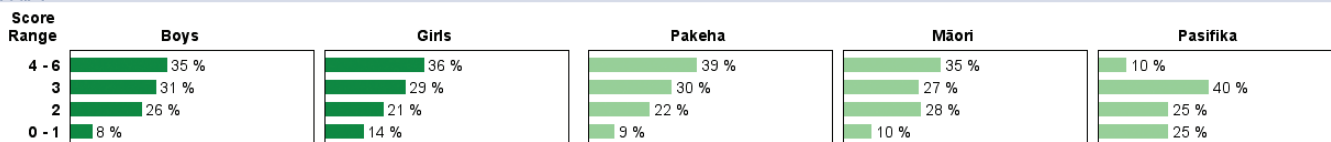
Demonstrate the wooden block sliding along the board with the wood touching the board. Put the wooden side face down and next to the rubber band. Lift the rubber band so that it sits on top of the peg then pull the block back to the line. Let it go.



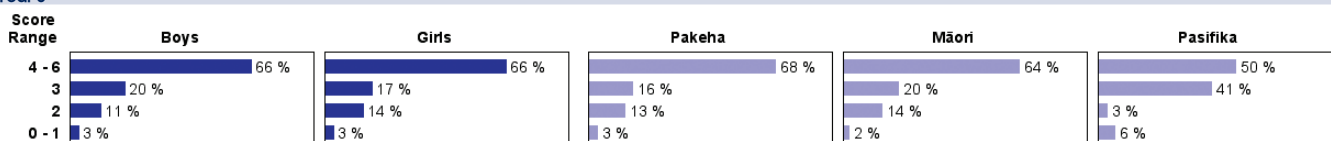
		% response 2007 ('03)				% response 2007 ('03)	
		year 4	year 8			year 4	year 8
1. Which side touching the board do you think will make the block slide further?	✓ plastic wood flannel sandpaper	77 (75)	82 (87)	If necessary help the student set up the block. 5. What did you find out? <i>PROMPT: Explain why that happened.</i> Tested all surfaces: <i>yes (without prompting)</i> <i>yes (with prompting)</i> no Reported: sandpaper least distance For slide furthest, reported: plastic wood flannel Quality of explanation: very good ("friction") good (smooth plus) fair (smooth vs. rough) poor/missing Total score: 4-6 3 2 0-1		12 (15)	19 (30)
2. Why do you think that?	less "friction" smooth, slippery, less catching/ rubbing/grippy	0 (2)	4 (9)			51 (53)	55 (50)
3. Which one of the four sides do you think will prevent the block from sliding as far?	plastic wood flannel ✓ sandpaper	74 (79)	84 (81)			37 (32)	26 (20)
4. Why do you think that?	more "friction" rough, more catching/rubbing/grippy	2 (5)	1 (0)			53 (58)	61 (56)
		4 (1)	1 (1)			78 (78)	85 (85)
		17 (6)	9 (8)			6 (5)	3 (6)
		77 (86)	89 (90)			1 (2)	2 (2)
		0 (0)	5 (12)			0 (0)	8 (9)
		58 (70)	80 (78)			2 (4)	7 (5)
						51 (58)	61 (57)
						47 (38)	24 (29)
						35 (49)	66 (68)
						31 (24)	18 (23)
						23 (17)	13 (8)
						11 (10)	3 (1)

Subgroup Analyses:

Year 4



Year 8



Commentary:

The performance of the apparatus for this popular task was a little erratic, so that the anticipated results were not always observed. The total score focused on prediction and explanation, rather than experimental findings. There was a moderate decline in the performance of year 4 students between 2003 and 2007. Māori students performed similarly to Pakeha students.