

Trend Task: Fishing Game

Approach: One to one
Focus: Investigating, applying and evaluating design
Resources: 2 fishing toy games (1 dismantled, 1 working order)

Year: 4 & 8

Questions / instructions:

In this activity you will be looking at a children's toy and telling me how it works.

Hand student toy game (working order).



This toy is a fishing game. The aim of the game is to catch as many fish as you can before it stops turning. I'll wind it up and you can play the game. See how many fish you can catch.

Wind up the toy and let the student play with it.

Now let's see how the toy works.

- How are the fish caught on the fishing line?

PROMPT: Can you show me how this works?

Explanation involving magnetic attraction:

- mentioned magnet on fishing line, metal inside fish mouths
- reverse of above, or identified both parts as magnets
- general idea that a magnet is involved
- no mention of magnet

Mentioned: fish are only "caught" when their mouths are open

- How do the fish open and close their mouths? You can use the toy to see how it works.

PROMPT: Can you show me how this works?

Explanation of turntable:

[(blue part) rotates/turns, sloping ramps (parts) underneath push fish up.]

- clear explanation
- vague explanation
- mentioned ramps but not function
- no mention of ramps

Mentioned: when fish are pushed up, their mouths fall open

% response
2008 ('04)
year 4 year 8

17 (21)	21 (30)
44 (39)	57 (43)
30 (32)	21 (26)
8 (8)	1 (2)
32 (38)	31 (35)
7 (5)	20 (17)
29 (30)	37 (43)
11 (15)	11 (13)
54 (50)	32 (27)
39 (36)	55 (57)

Hand student toy game (dismantled).



Here is the same toy but it has been taken apart so you can see how it works and how it is made.

Hand the student the winder mechanism.

- Look carefully at the winder. How does the winder make the game work?

Explanation of turning the winder to wind up a motor/spring:

- specific mention of winding up spring (i.e. storing energy in spring)
- vague idea of winding up motor
- no relevant comment

Explanation of:

- the spring/motor then making its axle (and/or the associated cogs) turn
- the large cog alongside the spring making the other cog(s) and/or axle(s) turn
- the cog on outside of motor connecting to cog on turntable (making it turn)

- Is there anything that could be done to make this a better toy for children?


PROMPT: What could be done?

Quality of ideas:

- strong
- moderate
- weak

% response
2008 ('04)
year 4 year 8

4 (8)	13 (13)
56 (61)	52 (55)
41 (31)	35 (32)
23 (30)	37 (43)
27 (29)	44 (38)
53 (49)	63 (67)
12 (15)	20 (29)
44 (36)	50 (41)
44 (49)	30 (31)

	% response 2008 ('04)		% response 2008 ('04)	
	year 4	year 8	year 4	year 8
				
5. Are there any people this toy might not be suitable for? Why?				
dealt specifically with danger of removable small fish for little children who might put the fish in their mouths	54 (53)	68 (74)		
Overall quality of ideas:				
strong	7 (12)	12 (17)		
moderate	60 (52)	56 (61)		
weak	33 (36)	32 (22)		
Total score:				
13–18	4 (9)	15 (14)		
10–12	16 (15)	28 (37)		
7–9	35 (23)	30 (28)		
4–6	30 (39)	22 (15)		
0–3	14 (13)	5 (6)		

Subgroup Analyses:

Year 4					
Score Range	Boys	Girls	Pakeha	Māori	Pasifika
13–18	5 %	3 %	5 %	1 %	3 %
10–12	17 %	16 %	19 %	11 %	8 %
7–9	34 %	36 %	40 %	25 %	19 %
4–6	28 %	32 %	27 %	38 %	40 %
0–3	16 %	13 %	9 %	25 %	30 %
Year 8					
Score Range	Boys	Girls	Pakeha	Māori	Pasifika
13–18	16 %	14 %	19 %	6 %	3 %
10–12	27 %	29 %	31 %	24 %	15 %
7–9	29 %	31 %	29 %	33 %	26 %
4–6	22 %	22 %	18 %	27 %	47 %
0–3	6 %	4 %	3 %	10 %	9 %

Commentary:

Students were moderately successful in explaining the workings of a mechanical game involving magnets, springs, cogs and a motor. Many students, at both years, had good ideas on how to improve the game. Gains from year 4 to year 8 were moderate. There were negligible gender differences. Pakeha students were more successful on the task than Māori and Pasifika students at year 8. Results were similar to the 2004 results.