Separating mixtures

Approach: Team *Level:* Year 8 & year 4

Resources: A mixture in a pack: flour, paper clips, 5mm polystyrene balls, 3mm lead balls; equipment for separating: tweezers, sieve, magnet, funnel, magnifying glass; A2 manilla paper; plastic drop cloth; blu-tack for putting chart on wall; 4 small containers; big felt pen.

All of the separating equipment except the mixture is kept out of sight until the chart has been written.
In this activity you are to work as a team. In a team activity it is very important that everyone is taking part and helping. Your team has the job of working out how to separate some substances which have been mixed together. There are 4 different substances in the mixture. They need to be separated and put into four coloured containers.

Before you start to try to separate the mixture, I want you to think and talk about how you could do it. Do that now.
Allow up to 5 minutes for discussion.

Now I want you to tell me what you would do. I will write down the instructions on a chart. I will ask each person to help by telling me what to write down.

Ask each student in sequence until ideas are exhausted. Teacher-administrator writes up instructions on the chart.

I have *some* equipment that is available for your team to use.
Now think about your plan again. You might need to change it because we can only use the equipment we have here. Tell me any changes you want me to make on the chart.

Write up any changes.

All right, now I want you to go ahead and try to separate the mixture, following your plan. Put the separated substances into the 4 coloured containers. **Allow time for separation activity.**

I want you to stop now — put all of the materials down, so that we can talk about what you have done. I want each member of the team to help answer my questions. First of all, tell me how your plan went.

Did you have any problems? Do you think you would do anything different if you were to do it again?

		% responses y8	y4
Planning without equipment			
Good evidence of systematic approach		69	33
Good thinking about equipment		58	17
Good thinking about the mixture		34	6
Planning with equipment			
Modifies plan to incorporate equipment		87	92
Selective choice of equipment		96	76
Overall planning score	Excellent	51	12
	Good	37	50
	Weak	12	38
Team work in planning	Excellent	43	25
	Good	48	53
	Weak	9	23
Experimentation	Systematic approach	60	25
	Good use of equipment	46	52
	Good team work	69	23
Adequacy of report	Very good	47	10
	Moderate	49	43
	Weak	3	47