5.4   Waste separation

Basic information and collecting ideas	The students should first understand the special properties of the substances and name the separation method: ▪ Sand (high density / sinks to the bottom / sedimentation) ▪ Plastic (low density / floats on water/ flotation) ▪ Salt (high boiling point / remains when water is evaporated / distillation) ▪ Water (lower boiling point at 100 ^{o}C/ water vapour condenses in a cooled vessel / distillation)
Setting up and conducting experiments	**Set up:** ▪ multimeter ▪ filter paper or newspaper ▪ scissors ▪ 1 plastic cup 100 ml ▪ 2 plastic cups (clear) 500 ml ▪ filter sand/clean sand ▪ table salt ▪ 1 teaspoon ▪ tap water ▪ tea light/candle Let the various groups carry out their own separation concept and then present it to the whole class
Observing and documenting	Discuss with the class which concept works best.
Analysing and reflecting	Address the subject of waste and recycling and point out that a large proportion of waste consists of valuable substances. If these substances are not recycled, the problems will further increase.
Doing further research	The students should recognize from the table that plastic consists of different materials with different densities. Polyethylene floats on water and can be skimmed off. Afterwards, table salt can be added to the water until polystyrene also starts to float due to the higher density of the saline solution.

Table in "Doing further research" cell:

Plastic	Density (g/cm^3)
Polyethylene	0.96
Polystyrene	1.05
PET	1.38

Technical and vocational application	▪ Separation of garbage at a dump for recycling
	▪ Separation of plastic materials for recycling due to their different densities
	▪ Separation of different metals (separation using magnets)

Space for notes