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| Session leaders:Contact number:Date:  |
| Session theme: Water for everyone – building a water filter |  |
| Session objectives:  | * Understand the importance of water and access to it isn’t equal
* Describe the role of engineers in bringing access to water
* Design a water filter
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| Careers links:  | * Engineering – civil, chemical, mechanical
* Environmental Science
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| Starter questions: (10 minutes) | * Where does your water come from?
* What do you use water for?
* What would you drink/wash with if you had no water or if it was dirty?
* How do engineers get water to the tap and how do they clean it? (into activity)
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| **Activities**  | **Notes**  | **Materials** |
| Step 1: Design your filter (10 minutes)* Consider what makes a good filter
* Work in teams and agree design **before** building

Step 2: Construct your filter (20 minutes)* Make sure everyone plays a part in building the filter that the group has designed.

Step 3: Test and observe (10minutes)* Make predictions on which layer of the filter different contaminants are removed.
* Observe what actually happens and make notes, and compare with predictions – were you right?

Wrap up & reflect (10 minutes)Reflective questions:* Did the filters work?
* Did they work the way you predicted they would?
* What would you do differently?
* Do engineers need to consider anything else in water?
	+ Bacteria and biological contaminants
* How do you think real water filters are designed and built?
 | This will probably get messy, might be worth having adults in control of water until such time as it’s needed. Mix up the contaminated water in advance to save time on the day and confirm numbers in advance to ensure enough materials are bought. | * Pens/pencils
* Cut-off 2L plastic bottle (1 per group)
* Cups for filtration material
* Gravel
* Sand
* Cheesecloth (2 x 10cm square per group)
* Rubber band (1 per group)
* ‘contaminated’ water enough to fill filters
* Contaminant ideas:
	+ Dirt
	+ Grass/leaves
	+ Cooking oil
	+ Litter such as plastic or paper clips
	+ Food colouring
	+ Food scraps e.g. eggshell
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| Summary: What did we learn, what are the real world applications, how does this link to careers?  |  |  |