

**Design a handheld device for
generating electricity
Lesson Plan – GCSE & above**

Skills that you'll use

- You will learn about designing for a particular user.
- You will learn about simplifying designs.



Materials needed

- Pencil or pen
- Some paper



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Activity plan

Introduction (5mins)

In countries like Malawi and Zambia there are remote areas where many families live that don't have access to electricity. No sockets to plug things into, no lights to switch on at night. When the sun goes down everything is pitch black.

Families often use kerosene lamps and can spend around half of their income on buying fuel for their kerosene lamps. The lamps are sometimes made from nothing more than tin cans that food comes in and as the kerosene burns they release deadly fumes. Tragically, kerosene lamps can be knocked over by accident and start rapidly spreading house fires.

Henry James, a young designer, heard about this problem and knew that design could find a solution. What he didn't know was how much his solar light solution had to do for a very small amount of money. Henry and his team had a lot of user needs to meet, such as making the light versatile enough that it could be used for a range of tasks.

Watch the Design Museum's film about the SM100 Solar light designed by Henry and his company InventiD.



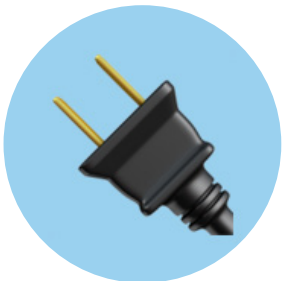
Activity plan

Discuss (5-10mins)

- What tasks have you done so far today?
- How many of them used electricity?
- Are there any ways you can save electricity in your daily tasks?
- Do you think that you could do any of your daily tasks completely off the grid?

Research (10 mins)

- Go online and find out how many people in the world are 'off the grid' (without mains electricity).
- What alternative renewable energy sources can be easily installed on a small-scale basis for a village?



Activity plan

Activity (30 mins)

Imagine that your day had to be 'off the grid'. All your tasks have to be done without mains electricity. Write down a list of the things that you do in one day and design a system of doing these tasks off the grid.

Can you design a handheld device for generating electricity to power small tasks such as charging a phone or powering a small light for around 30 mins. Your design can't use solar power but has to use a form of renewable energy to power it. Try to be inventive with your design and try to make it inclusive; not everyone can use your device in the same way.

Now that you've completed your design why not share it with the Design Museum on social media using **#DesignFromHome?**



Optional task

Extra (1 hour)

Keep a diary of the things that you do today. Note the things that require electricity to make them happen and make a tally of how many tasks and activities in your day use electricity.

- Do you think that you could live 'off the grid' with no electricity?
- How many of your daily activities could you substitute for things that use no power?
- What would those substitutes be?

Share your list with the Design Museum on social media with **#DesignFromHome**.

