



Schools & Homes Energy Education Project/Solar-Active

Tell Me, I'll Forget, Show Me, I'll Remember, Let Me Do It, I'll Understand. Chinese Proverb

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Teachers from Malta(2), China(1), Hong Kong(1), UK(1), Netherlands(3), Denmark(3), Norway(4), Spain(1), attended the solar car sessions at ASE Conference on 4th and 5th January 2018.

After building the solar car I normally would have taken everyone outside to run and race the car once the car was working with the battery unit. However due to time constraints I chose to focus on the design of the car components that provides the opportunity for students to follow the **Enquiry Process to work scientifically**: enquire, analyse, communicate and solve i.e. to make adjustments (i.e. problem solving) for the car travel in a straight direction and fast.

For example, I used a 'jig' created from a hole punch so two holes of axle support are placed in the same position and bend in card is the same length on both sides. See figure 1 below.

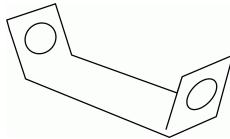


Figure 1: front axle support

Table 1 List of the criteria that can affect the car to travel straight and fast as possible. Asking students to focus on precision in the building of the car. Teachers can either provide the table for students or ask students to create their own.

Table 1: Design criteria that affects car to travel straight and fast

Placement of the two holes in front axle support
Length and sharpness of the bend of the axle support
Play between axle and axle support
Placement of Velcro on PV cell and on axle support
Alignment of axle support and PV cell
Placement of motor clip on plastic card
Placement of motor assembly
Friction between wheels and straw of axle support
Alignment of straw on double sided tape of alternative support
Circumference of wheel in relation to gear ratio
Track – surface and if level
Tread of wheel – surface and width and in relation to track
Weight of wheel
Circumference of wheel
Is reducer in centre of wheel that the axle is inserted into
Is the axle straight
Level of wind and direction
Direction and angle of sun wave lengths hitting solar cell
Is there any shade from buildings, trees or the students?

I will continue to offer to those that attended my ASE session £10 off our retail prices for the solar cars. Please check [SHOP](#) off our website for current retail prices. For assembly guides and other support documents please go to [ASSEMBLY INSTRUCTIONS-CARS](#) on our www.solar-active.com



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During the session I also launched a new sustainable technology resource The Hot House, which also covers the **Enquiry Processes: Working scientifically**.

The 'HOT HOUSE': Insulation education resource

The Schools & Homes Education Project/Solar-Active charity with their social enterprise trading arm Recovery Insulation and Sheffield Hallam University school of Science Education are developing a bespoke science based resource – the HOT HOUSE. The resource is based around physics and **thermal transfers heat insulation and acoustic enquiry at KS3 and KS4 (KS4 activity to be related to the current required practicals)**. Inno-therm/Metisse¹ and other 'eco' insulation products will be used in the resource. Initial trials have been successfully conducted by teachers and training teachers. Solar-Active educational activities are based around ideas that science is all around, and scientific innovations and principles can be found in everyday materials such as building insulation.

There are a number of key ways to create a greener/sustainable economy. One way is through education via the up-skilling (<http://solar-active.com/solar-active/wp-content/uploads/RISE-Award-Poster.pdf>) of our existing and future work force in promoting sustainable building materials in new build and refurbishment for healthy buildings.

The education resource and approach facilitates the learning of problem solving skills and the value of failure in the learning process essential for up-skilling for employment for young people; too highlight success achieved through trials and setbacks. A science specific activity but with a sustainability context based around Health & Well Being.

Components of resource

1. Video
2. HOT HOUSE templates along with classroom worksheets and design & construction guide.



3. Thermometer options (not included): normal, digital @ £15 and wireless @ £30 plus software fee.
4. Insulation: Inno-therm/Metisse recycled cotton/denim thermal insulation and other 'eco' insulations.

¹ Recovery Insulation has manufactured via another social enterprise in France, a low carbon recycled cotton/denim non-itch sustainable thermal and acoustic insulation.