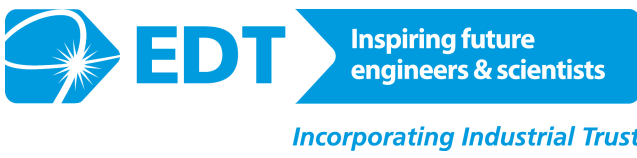




The Eco Classroom

www.go4set.org.uk



The Eco Classroom

Every country in the world has classrooms where millions of pupils are taught every day. These classrooms can be very different in size, in style and in their construction but one thing they have in common is they use up resources in their construction and in their running, for example heating, running water, insulation.



Eco-classrooms are “designed to minimise the negative impacts on the environment through the use of new and different energy sources, building design, building practices and building materials”.

Think about your own classroom; what materials were used to build it? How is it heated, where does the water used come from?

Go4SET

EDT

Your challenge is to work with the other members of your team and your mentor to provide recommendations for a new build eco-classroom in your school.

What to do first?

Energy:

Think about how energy is used at your school, particularly in your classroom.

- What types of energy are used and are there any renewable energy initiatives in your school, such as solar panels, biomass projects, geothermal energy or wind power?
- Could you make more from natural resources, such as sunlight or wind energy? What about biomass projects to create heat?
- In what ways can heat energy escape and how can you stop this using environmentally friendly ways?

Begin by working out the current energy efficiency rating of the school. Ask to see some energy bills such as an electricity bill; your teacher will be able to help with this. *You can also work this out for your own home using the Energy Audit sheet provided.* Think about saving energy at home and how this can be used in school.

The Eco Classroom

Water:

- What is water used for in your classroom? Don't forget uses such as drinking water and feeding plants. Does every use need clean water or can water be recycled from other sources?
- Where does the water come from? Where is it stored? Could more be made from natural sources such as rain water?
- How is your hot water heated?
- How is water wasted in your classroom?

Again, you can ask for water bills to see how much your school currently costs and think about uses of water at home? How can you save water at school and at home?

Understanding Industry:

- Research the latest, innovative methods of construction; what materials are used that are better for the environment and how can recycled materials be used within the construction of the building?
- Consider the best use of building design and materials to maximise efficiency, for example:
 - Double glazed windows to prevent heat loss in winter and remain cool in summer.
 - Concrete floors to absorb energy during the day and release it at night.
 - 'Eco fleece' insulation used from wool and recycled plastic and many, many more.
 - Energy saving light bulbs which may be triggered using energy sensors.
 - Sensor water taps to avoid wasting water.
 - Untreated timber sourced from sustainable plantations.



The Eco Classroom

Plan of action!

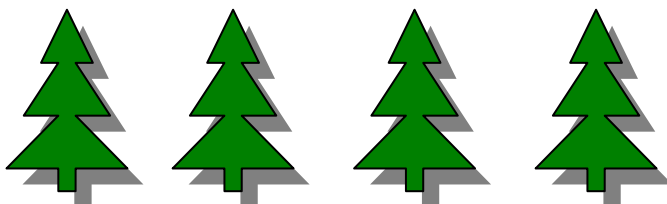
- Make sure you understand the project brief and find answers to your starting questions.
- Create your specification (the list of features to be included in your proposal). You should try to do this as early as possible, the first week is ideal!
- Create as many ideas as you can which might follow your specification. Decide which main idea, set of ideas, to focus on and develop into a practical proposal.
- Always keep good notes about what you are doing; a team diary of progress is a good idea.
- Write your project report as you go along.



- **Plan** your work over the few weeks using a Gantt Chart (at the end of this booklet):
 - Make lists of the things that need to be done.
 - Try to organise these things into a suitable order.
 - Try to decide which team member/s will do what things.

Good planning at the beginning of a project means you will be more organised and will make your project more structured. This will give you the ability and confidence to finish on time!

- Evaluate the outcome of your project; how well does it satisfy your specification? How effective is your model?



The Eco Classroom

- Costs—You will need to show how your design can save money. To do this you need to think about how much your design will cost to begin with and how much it could save over a period of time. The savings could be environmental as well as financial.
- Give yourself a team name and allocate roles depending on what each member of the team is good at, for example Managing Director—The boss!, Design Engineer—good at ideas and drawing, Finance director—in charge of how much money is being spent / saved etc.
- The following websites might be useful:

www.energysavingtrust.org.uk/
www.biggreenswitch.co.uk/
www.carbontrust.co.uk
www.greenbuildingpress.co.uk/
www.energysavingsecrets.co.uk/



Tips...

- Make the most of natural resources that are free, such as sunlight for heat for both warmth and hot water.
- Concentrate on a design that will have minimal impact on the site and maximum care for the surrounding habitat during the building process.
- Consider sustainable outside building designs to include native tree plantings, bird feeders etc.
- Research current eco-buildings around the country, that are biodiversity friendly.

What you need to produce

The end of your project is your Celebration and Assessment Day (CAD) where you will present what you have done to professional engineers. The assessment has **four stages** that must be ready by the day:

1. A model of your project

Your model can be built with any materials available and should visually demonstrate how your project would work and look.

2. A display

This is a written and visual method of communicating your project to the assessors, who will visit and question you at the stand. Try not to clutter your board; think of what looks good and best demonstrates your project to a passer by. Maybe you could take photos of you all at work throughout your project, or could draw a logo for your team? You will need to ask your teacher to get anything you will need to stick your project to your board, eg. Velcro pads, scissors, etc. Your teacher will also have the dimensions of the board.



3. A five minute presentation and questions

You may want to use PowerPoint or could just use your model and display but you need to talk about how your model works. Also, you should talk about how you went about coming up with your ideas and how you overcame any problems.

Make sure every member of the team speaks during the presentation and that you know enough about your project to be able to answer questions about it from the engineers.

Remember, practice makes perfect!



What you need to produce

4. A written report

You need to hand in a professional report **one week** before the CAD so the assessors can read through this before your presentation: you will also need to bring copies on the day that are printed on A4 paper and bound as a professional report. Your report should include the following information:

- Say something about yourselves; the team members, your teacher and your mentor and their company.
- Explain what thoughts you all had when you were first presented with the challenge.
- Describe any research you had to do to understand the challenge
- Explain how you planned your project, how you decided when to do things and who would do them.
- Describe how you developed your first ideas into a main proposal.
- Describe any problems your team had and say how you dealt with them.
- Describe how you presented your proposal and how you built your model
- Say how successful your proposal is and why.
- Try to say how your proposal might be useful in other situations, such as in the developing world.
- Personal Appendix: half a page on each individual student and your contribution, tasks and what skills you have learned during the project.

Try to think of suitable titles for each section. Consider putting some of your diagrams and graphs into a special section at the end, called 'Appendix', so not to clutter the main report.

Make a front cover for your report. You will need to state the names of your team, school, teacher(s), company mentor(s) and company.

Get your mentor to check your report a few days before the submission deadline; the quality of the report (spelling, grammar etc.) will be considered during the marking process so you may need time to edit the report. There is more guidance in the scheme Handbook; your teacher has a copy.



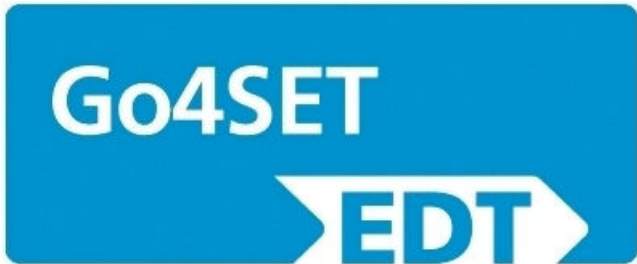
Timetable

Launch	Meet with your mentor and arrange when you are going to do the project and when you are going to go on your company visit.
Week 1	Start your research. Look at the eco classroom ideas including water and energy consumption and begin to put together your plans.
Week 2	Decide which areas you are going to consider and draw up some possible ideas.
Week 3	Choose from your ideas and decide how you are going to build your chosen design. Explain why you chose your solution and think about what materials you will need.
Week 4	Begin work on your model. How can you best represent your idea? What materials will you need for your model? Ask your teacher how to get them.
Week 5	Work on your model.
Week 6	Work on your model. Your design may alter as you build your model. Keep a note of this and explain it in your presentation.
Week 7	Work on your model and start writing the report.
Week 8	Carry on with the report and the model.
Week 9	Get your report checked by your Mentor and send it to Go4SET to be passed to the Assessors.
Week 10	Put the finishing touches to your model and presentation.
CAD	Present your work to the Assessors.

Timetable

The table below is what engineers call a **Gantt chart**. You should use this to plan out how long you need to spend on different tasks. Fill out the weeks as in the example to decide when you plan to do a task.

		Week Number																			
		1	2	3	4	5	6	7	8	9	10										
Tasks	Example																				
	Specification of problem																				
	Company visit																				
	Research																				
	Generation and evaluation of ideas																				
	Design ideas and evaluation																				
	Prototyping and testing																				
	Manufacture and production																				
	Final evaluation & modification																				
	Writing report																				
	Producing presentation																				



Go4SET Regional Contact:

Company Mentor Contact:

Project Report Submission Date:

Date and location of CAD