



GOLD AWARD

MAKE A SKATEBOARD



Typically 70 hours of project work
Recommended for 16-18 year olds



Design & make
project

Design and make your own
skateboard.

#engineering

#design

#sport



HOW TO RUN CREST USING THIS ACTIVITY

Entering your project without a teacher or facilitator? No problem! You can enter your work yourself by following this link: www.crestawards.org/sign-in

Looking for some support? Find a mentor by contacting your local STEM Ambassador hub: www.stem.org.uk/STEM-ambassadors/local-stem-ambassador-hubs

To use their project to achieve a CREST Gold Award your students will need to:

- **Develop and lead the project**
- **Complete a minimum of 70 hours of project work**
- **Consider the broader impact of their project and demonstrate an innovative approach**
- **Write a project report or portfolio of evidence**
- **Reflect on their work during the project using a student profile form**

Preparation

Ready to get going with CREST? Sign up for a CREST account here: www.crestawards.org/sign-in

Create a new Gold Award project with the name(s) of the student(s) and the title of their project. If you don't have all these details, you can fill them in later!

We have some super handy workbooks and profiles for your students to use when running a CREST Award. You can download these when you create your CREST account by following the link above.

Run the project

Encourage your students to use the Gold student guide to plan and carry out their project. Each student involved in the project should complete their own profile form.

You don't want all their good work to go to waste, so be sure they keep a record of all their amazing progress. Keeping a regular project diary will save them precious time when writing their final project report.

The students should spend at least 70 hours on the project in total.

Remember to consider safety and risks!

Reflection

So, your students have been hard at work and completed their CREST project, but don't let this be the end of their learning. At the end of the project, each student should complete a Gold profile form and communicate their project. This is a chance for them to reflect on all the interesting things they've learnt and the invaluable skills they have used.

Students working in a group can either submit a joint report or separate reports, but they must each complete a profile form.

Use the CREST criteria on the profile form to help the students check that they have included everything in their report.

Enter your project for a CREST Gold Award

Hard work deserves a reward! Celebrate and certify your student's achievements by entering their project for a CREST Gold Award. Simply:

Log in to your CREST account at www.crestawards.org/sign-in

Select your project and upload the profile form per student, project report and other evidence, such as pictures and diagrams.

Finally, complete the delivery and payment details for assessment and to order your snazzy certificates.

Congratulations on submitting for CREST Gold!

What next?

Is university on the horizon for your students? They can use their project to help demonstrate their newly found STEM skills and knowledge in UCAS personal statements.

Don't keep all the fun to yourselves, encourage others to take part in CREST projects and share the wonder of science. For free ideas on how to get started, see www.crestawards.org

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Make a skateboard

In this project you will design, make and test a skateboard. You will research skateboard designs – their shapes, the materials they are made from and factors effecting performance. You will research how skateboards are tested. Finally, you will design, build and test your own skateboard thinking about how it could be mass produced.

Getting started

List all the things you already know about skateboards. Collect a few examples to investigate more closely.

Research:

Carry out some research into skateboard design and how they vary. Find out about the different components. How are they manufactured and designed? What different shapes and sizes are skateboards available in?

Research the science behind skateboarding and what affects performance. You need to decide which materials will be best to make your skateboard deck.

Use databases and other resources to find out properties of materials, and design and carry out some tests to see what's most suitable. For example, the deck must be strong and rigid, and the surface finish must have good grip, be waterproof and be hardwearing.

Design:

Use your research to come up with a design for your skateboard. If you plan to make the skateboard you will need to think about the ease of sourcing and shaping the materials.

Making the product:

If you have the time and resources, you should try to make your design. You will have to carry out a lot of research to find out about techniques used for cutting, shaping and joining materials.

Make sure you complete a thorough risk assessment before using tools and before testing your product.

Mass production:

If you manage to successfully make a prototype skateboard deck you could research how you might mass produce it. Think about how the manufacturing process would change if you had to make your product in batches of 500.

Things to think about

How will you safely design, make and test your skateboard?

Which design or materials make the "best" skateboard?

Is the "best" skateboard easily mass produced, or would another design or material be better?

Could you automate any of the processes?

Could Computer Aided Manufacture (CAM) be used to improve the process?

Useful resources

Contact skateboard manufacturers to find out how they test their boards.

Speak to your D&T departments to see if they have any materials that you can use. Local hardware and specialist stores may also be able to help.



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Health and safety

A science project is both dynamic and exciting but can also carry some risk. To avoid any accidents, make sure you stick to the following health and safety guidelines before getting started:

- find out if any of the materials, equipment or methods are hazardous;
- assess the risks (think about what could go wrong and how serious it might be);
- decide what you need to do to reduce any risks (such as wearing personal protective equipment, knowing how to deal with emergencies and so on);
- make sure your teacher agrees with your plan and risk assessment.

Once you've made your skateboard make sure you complete a thorough risk assessment before trying it out.

Think carefully about where you will test it and what protective equipment you will need to wear.

Remember!

Science isn't just about data. The most successful projects will demonstrate good communication skills and show original ideas that address a real-world problem.

Look at the world around you and consider all the innovative ways that you could address the challenge. Even if things go wrong, use this to show what you have learned. Don't forget to use the student profile form to help structure your project.