CREST AWARDS

BRONZE AWARD

MAKE YOUR OWN TOOTHPASTE

10H Typically 10+ hours of project work
Recommended for 11-14 year olds

Design & make project

Experiment with different ingredients to find the best recipe for cleaning teeth.

#chemistry
#health
#engineering

HOW TO RUN CREST USING THIS ACTIVITY

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 Bronze Award your students will need to:

- **Complete a minimum of 10 hours of project work**
- **Consider the broader impact of their project and demonstrate an innovative approach**
- **Complete the project workbook or short report in another medium**
- **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 Bronze Award project with the name(s) of the student(s) and the title of their project. If you don't have all the details, you can fill these in later!

Run the project

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.

Encourage your students to use the workbook or profile to plan and carry out their project, keeping a record of all their amazing progress.

Make sure you 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. They should now fill in any remaining sections of their workbook. This is a chance for them to reflect on all the interesting things they've learnt and the invaluable skills they have used.

Enter your project for a CREST Bronze Award

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

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

Select the project and upload a sample of the students' workbooks or other project evidence.

Check the participating students have met each of the criteria on the teacher assessment page.

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

Congratulations on completing CREST Bronze!

What next?

The scientific discovery doesn't need to end here. Students can have a go at the next level up – CREST Silver.

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**

STUDENT BRIEF

BRONZE AWARD

Make your own toothpaste

In this project you will make your own toothpaste and compare it to other commercially available toothpastes. You will then develop your recipe and write a standard operating procedure so that anyone can make your toothpaste.

Getting Started

First, you need a recipe for toothpaste.

The comparison : Next you should test your toothpaste. Toothpaste is supposed to clean teeth but it also matters to people that it tastes nice.

You could do a taste test with your and other toothpastes by asking your classmates to taste a little bit of them (but don't swallow!) and say what they think. They could comment on the way they looks and its consistency - how paste like it is?

Improving the recipe: Look at all the things your classmates said about the different toothpastes and decide if you think your recipe needs to be changed slightly. For example, you might want to add a little bit more flavour or add a different colour.

Writing a standard procedure: When you think you've made the perfect paste, re-write the recipe as a standard procedure. Standard procedures are really precise recipes or ways of doing things, it will mean that anyone who wants to make your toothpaste will make it exactly the way you want them to make it. These are the sorts of things you should think about ...

Make sure all the amounts are precise. For example, instead of writing '6 tbsp' give a precise measurement such as 90 cm^3 (1 tbsp equals 15 cm^3), otherwise people might use a heaped tablespoon or a flat tablespoon, which are different amounts.

Instead of saying 'add just enough water to make it toothpaste like', write down precisely how much water should be used.

Write down precisely how the mixture should be stirred. For example, should people use a spoon, or a fork? Should they mix it quickly, or slowly?

What will you need to say about health and safety?

Things to think about

Your testers could comment on its abrasiveness - how scratchy it is (rub it between your fingers to work this out).

Make sure you write down what people say.

You could give your toothpaste a name.

You could design a logo and packaging for your toothpaste.

Useful Resources

You could find your own toothpaste recipe on the internet, try searching for 'homemade toothpaste'.

If you can't find your own recipe for toothpaste, you can use the one below - you may need some help finding the ingredients.

You will need: bicarbonate of soda, salt,
glycerol, flavouring (e.g. peppermint or cinnamon) and food colouring.

Mix six tablespoons of bicarbonate of soda with two tablespoons of salt.

Add three teaspoons of glycerol, 10-20 drops of flavouring and 1 drop of food colouring.

Mix the ingredients thoroughly in a bowl and add just enough water to make it toothpaste like.

STUDENT BRIEF

BRONZE AWARD

Health and Safety

Science project work 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.

If you are going to test your toothpaste on people (e.g. a taste test) you will need to make it in a food technology room using clean, hygienic equipment and only using chemicals that are fit for human consumption.

Remember, some people are allergic to certain food colourings.

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.