CREST AWARDS

SILVER AWARD

ART RESTORATION

30H Typically 30 hours of project work
Recommended for 14-16 year olds

Practical project

Run tests on different paints to learn about art restoration.

#chemistry
#materials
#art

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: **https://www.stem.org.uk/stemambassadors/localstem-ambassadorhubs**

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

- **Develop and lead the project**
- **Complete a minimum of 30 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 Silver Award project with the name(s) of the student(s) and the title of the project. If you don't have the details yet, 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 Silver 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.

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. 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 Silver CREST Award

Hard work deserves a reward! Celebrate and certify your students' achievements by entering their project for a Silver CREST 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 Silver!

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.

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

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

SILVER AWARD

Art restoration

Every major art gallery has a scientific department, or easy access to scientific knowledge. There are many modern scientific techniques to find out about the sorts of materials and methods artists used. When we look at a painting now it's not always the same as when the artist painted it many years ago. Lots of materials change over the years because of chemical changes caused by interaction with light or oxygen for example. For this project, you will carry out different tests on various types of paints; you could even make some paints yourself.

Getting started

Start by researching the history of paint in art.

- What did early artists use? How did they colour their paints? What pigments were available to them?
- What are 'lake' pigments?
- What different oils are used to make oil-based paints? What are the advantages and disadvantages of oil-based paints?

There are numerous different sorts of test you can carry out:

Environmental changes: Changes due to environmental conditions are unlikely to occur during the time span of your project, after all, paints are designed not to deteriorate within a few years. Try accelerating the ageing process by using high intensity artificial lights (including UV, maybe), high temperature and/or humidity, or temperature/humidity cycling, etc.

Suitable solvents: Quite often the reason old paintings darken is because of deterioration of the varnish. Carry out investigations to find suitable solvents to remove varnish but keep the painting intact.

Loss of gloss: Another common problem with paint is the loss of 'gloss'. Devise a method of measuring the proportion of light reflected, then refine the method to measure the amount of light scattered at various angles. Remember, angle of reflection = angle of incidence.

Things to think about

As well as the variety of commercially available paint, you could try making your own. Try making your own pigments and 'lakes' (hopefully your earlier research will have unearthed an explanation of this; if not, search again!). Then make paints by mixing pigments with various binders, for example egg, for tempera, or oils such as linseed or poppy seed. You can buy pigments as well as making your own.

You can also look at different ways of restoring old paintings. You could try contacting an analytical chemist from an art gallery, or a university department specialising in art conservation and restoration for help.

STUDENT BRIEF

SILVER 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.

Remember - some pigments are toxic. Artists in the past did not realize this.

Careful – many solvents are hazardous.

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.