Making and Tubing Your Own Oil Paint

An Hands-On History & Science Activity Pack

Explore
Investigate
Create
Discover

From pigments... to paint... to the modern tube!

History + Art + Science = Amazing Inventions

Activities 1-15

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What Will You Discover?

Pigments • Paint • Chemistry • Art
Engineering • History • Invention

From a handful of pigment to a tube of paint – investigate how artists, scientists and inventors solved problems and changed the way we create.

Pigment Detective

Investigating the Secret Life of Pigments

Name: _____

Date: _____

Your Mission

Artists don't just choose a pigment because they like its colour! Different pigments behave differently when they are mixed with oil. Today you are going to become a Pigment Detective and investigate your mystery pigments.

Meet Your Pigments

Choose 3–5 safe, labelled pigments to investigate.

Pigment	Colour	Where is it from?
1.		
2.		
3.		
4.		
5.		

Look
Observe
Record
Discover!

1 Colour Detective

Look carefully at your dry pigment.

What colour do you see?

☐ Red ☐ Orange ☐ Yellow ☐ Green
☐ Blue ☐ Purple ☐ Brown ☐ Black
☐ White ☐ Other: _____

Does the colour look...

☐ Bright ☐ Dull ☐ Warm ☐ Cool
☐ Dark ☐ Light ☐ Earthy ☐ Intense

Draw or colour a tiny sample here:

2 Texture Detective

How does the dry pigment feel?

☐ Very fine ☐ Fine ☐ Grainy
☐ Gritty ☐ Fluffy ☐ Sandy
☐ Other: _____

Describe the texture:

_____
_____
_____

Do you think this pigment has very small or larger particles?

My guess: _____

3 Particle Size Investigation

Use a magnifying glass if you have one.

What do you notice?

☐ Looks very smooth
☐ Looks like tiny grains
☐ I can see different-sized particles
☐ Some particles seem to form clumps
☐ I can't tell

Draw what you see:

Do you think particle size might affect how the paint looks? _____

4 How Much Oil Does It Need?

Add a tiny amount of linseed oil and mix.

What happens?

☐ Still very dry
☐ Begins to stick together
☐ Becomes a paste
☐ Looks very oily

How much oil did you need before you could make a workable paint?

☐ Very little ☐ A little ☐ Quite a lot ☐ A LOT!

Describe your paint:

_____
_____
_____

5 The Dispersion Challenge

Mix the pigment and oil with your palette knife.

Before mixing:

☐ Lots of dry clumps
☐ Some clumps
☐ Mostly even

After mixing:

☐ Still lots of clumps
☐ Some small clumps
☐ Mostly smooth
☐ Very smooth and even

How easy was it to disperse?

☆ ☆ ☆ ☆ ☆

(1 = very difficult, 5 = very easy)

6 Paint Test

Spread a small amount of your paint onto a test surface.

Try making:

A thick stroke: _____

A thin stroke: _____

A small dot: _____

How does the paint behave?

☐ Smooth ☐ Gritty ☐ Thick ☐ Runny
☐ Creamy ☐ Stiff ☐ Easy to spread
☐ Difficult to spread ☐ Other: _____

7 The Opacity Test

Opacity means how well a paint hides what is underneath it. Paint two lines, then paint over part of each with your pigment.

How much of the line can you still see?

☐ I can see almost all of it
☐ I can see some of it
☐ I can barely see it
☐ I can't see it at all

A

B

My pigment is:

☐ Very transparent ☐ Quite transparent
☐ Semi-transparent ☐ Quite opaque ☐ Very opaque

Pigment Detective Record

Pigment: _____

Colour: _____

Texture: _____

Particle-size clues: _____

Amount of oil needed: _____

Ease of dispersion: _____

Opacity: ☐ Transparent ☐ Semi-transparent ☐ Opaque

Overall rating:

How interesting is this pigment? ☆ ☆ ☆ ☆ ☆

How easy was it to turn into paint? ☆ ☆ ☆ ☆ ☆

Super Sleuth Challenge

(Older children)

Research where your pigment comes from and whether it is naturally occurring or manufactured.

Where does it come from? _____

Is it natural or manufactured? _____

When did people begin using it? _____

What is it made from? _____

The Final Question

Which pigment would you choose to make into oil paint? And why?

_____
_____
_____

Small particles. Big discoveries!

The Perfect Paint Challenge

Same colour... different amounts of oil... which is best?

Your Mission

Make three small batches of the same colour, using different amounts of oil. Then paint them onto the same surface and compare the results.

What You'll Need

- ☐ A small amount of pigment (same colour for all three batches)
- ☐ Linseed oil (or suitable artist's oil)
- ☐ Three small containers or mixing wells
- ☐ Palette knife or mixing stick
- ☐ A clean surface to paint on (e.g. card, paper or canvas board)
- ☐ Label A, B and C

Tip!
Use the same pigment for all three batches so you can compare them fairly.

1 Make Your Paint Batches

A Very little oil

Add just a few drops of oil.

Mix until you have a smooth paste.

Label this batch A

B Medium amount of oil

Add a little more oil than batch A.

Mix until smooth.

Label this batch B

C More oil

Add a larger amount of oil.

Mix until smooth.

Label this batch C

2 Paint and Compare

Paint a stripe of each colour onto the same surface.
Use the same brush and try to make each stripe the same size.

Paint your three stripes here

3 Compare and Record

Which batch is...

Property	A	B	C	Which is the most?
Easiest to spread?				
Thickest?				
Glossiest?				
Strongest in colour?				
Most transparent?				

The Big Question

Can you work out which mixture contains the most oil without being told?

Think About It

- What do you notice about the texture of each batch?
- How does the amount of oil affect the colour and finish?
- Which batch do you think would be best for painting a thick, textured surface? Which for a smooth, fine detail?
- What clues helped you decide which had the most oil?

Scientists and artists both look closely, ask questions and experiment!

Same colour. Different oil. Big differences!

Mull It Over

How does mulling make a difference?

Mulling helps break down pigment clumps and creates a smoother, more even paint. It also helps to work the oil through the pigment.

Your Mission

Investigate the effect of mulling on your oil paint. Make two samples of the same colour, then compare them. Use a magnifying glass to look closely. Which looks smoother? Which feels smoother?

What You'll Need

- ☐ The same pigment for both samples
- ☐ Linseed oil (or suitable artist's oil)
- ☐ Glass slab or smooth mixing surface
- ☐ Palette knife
- ☐ Glass muller (or clean, heavy glass jar)
- ☐ Two small containers or mixing areas
- ☐ Magnifying glass
- ☐ Paper and pen for notes

1 Make your paint

Use the same amount of pigment and oil for both samples. Mix both to make a smooth, workable paint.

2 Sample A – mix only

Thoroughly mix one sample with your palette knife. This is your 'mixed only' sample (A).

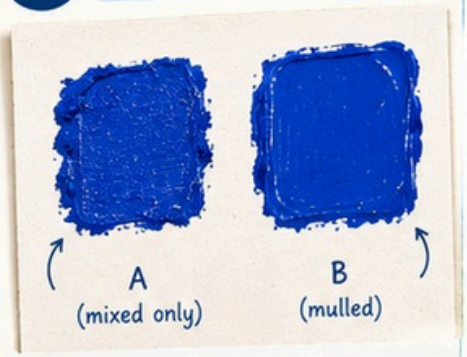
A

3 Sample B – mull

Take the second sample and mix it, then carefully mull it using a glass muller. This is your 'mulled' sample (B).

B

4 Paint side by side



Use a clean brush or palette knife to paint both samples onto the same surface. Keep the strokes as similar as possible.

5 Look closely

↙ Use a magnifying glass to look at the texture, surface and any visible pigment particles.

What do you notice?
Which one looks smoother?
Which one feels smoother?

6 Record your findings

Which looks smoother?

A ☐ B ☐ Both ☐

Why? _____

Which feels smoother?

A ☐ B ☐ Both ☐

Why? _____

Think about what you can see, what you can feel, and how the paint behaves on the surface.

The Science Behind It

Mulling works by breaking up pigment clumps and helping to disperse the pigment more evenly through the oil. This creates a smoother texture, better colour strength and a more consistent paint.

Think Deeper

For older children

- Why do you think mulling makes a difference?
- How might particle size affect the final paint?
- What do you think would happen if you mulled for longer? Or not at all?
- Can you think of other ways to test the paint?

Same pigment. Same oil. Different results!

John Goffe Rand (1813–1893) artist and inventor

Design a Better Paint Tube

Rand's invention was a collapsible metal tube that could be squeezed to push out the paint and then closed to keep the rest fresh.

Imagine you are John Goffe Rand in 1841.

Your Problem:

Artists need to transport wet paint without it drying out.

Your Challenge:

Design a solution! Draw your invention in the space below and label the parts.

Think like an inventor!

- ✓ What will keep the paint moist and fresh?
- ✓ How will you stop air getting in?
- ✓ What materials will you use?
- ✓ How easy will it be to use and carry?

Label your design:

- Container
- Opening
- Closure
- Paint
- Air
- Pressure
- Storage

A simple idea... ...with a big impact!

My Design:

You can draw your design here. Add labels and arrows to show how it works.

How Does It Work?

In the space below, explain how your design prevents air from reaching the remaining paint.

Tip: Think about how the tube holds the paint, what happens when it is squeezed, and how the closure works.

Extra Challenge (for older children)

Can you improve on John Goffe Rand's idea? What new features would you add to make your tube even better?

My ideas:

Small changes can make a big difference!

Build a Cardboard Paint Tube

Design • Create • Test • Improve

Can you build a container that lets you push your paint out, but doesn't let it escape when the opening is closed?

This is the same problem that John Goffe Rand solved with his metal tube in 1841!

A simple idea... with a big impact!

You Will Need

- ☐ Cardboard (e.g. from a cereal box)
- ☐ Paper (e.g. baking paper or plain paper)
- ☐ Tape (masking tape or clear tape)
- ☐ Modelling clay
- ☐ A paper label (or draw your own)

Simple materials... clever design!

Step by Step

1 Make the tube

Roll a piece of cardboard into a tube and tape it securely.

2 Add the base

Seal one end with paper and tape. This will be the bottom of your tube.

3 Make the opening

Fold the other end to make a small opening. You can shape it like a nozzle.

4 Add the clay

Push modelling clay into your tube. Don't overfill it.

5 Create a closure

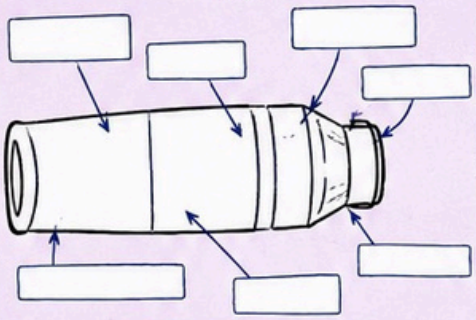
Make a cap from cardboard or paper. It needs to fit snugly to stop the clay escaping when it's closed.

6 Decorate your tube

Add a paper label. You can design your own or copy a real artist's label.

Design Your Tube

Draw and label your paint tube. Use the words in the box to help you.



Word Bank

container opening closure
paint (modelling clay) air pressure
storage

Test It!

1. **Squeeze your tube.**
   Does the clay come out easily?
   Yes ☐ No ☐
   What do you notice?
   _____
   _____

2. **Close the tube.**
   Does the clay stay inside?
   Yes ☐ No ☐
   What could you improve?
   _____
   _____

Good design keeps the paint in, but lets you get it out!

Think Like an Engineer

What problem is your design solving?
_____
_____
_____

How does your tube aim to keep the clay from escaping when it's closed?
_____
_____
_____

What could you do to make your design even better?
_____
_____
_____

Think about shape, pressure, materials and a good seal!

Challenge!

Can you make your tube:

- ☐ strong enough to squeeze?
- ☐ easy to use?
- ☐ neat and tidy?
- ☐ look like a real paint tube?
- ☐ work with different colours?

There's no one right answer – just clever ideas!

Extra Challenge (for older children)

Research John Goffe Rand's invention.

- What was the problem he was trying to solve?
- How did his tube work?
- What materials did he use?
- Why was his invention so important for artists?

The Big Question

How does your design compare to Rand's invention?
_____
_____
_____
_____

Small ideas can make a big difference!

John Goffe Rand (1813–1893) inventor of the modern paint tube in 1841.

Before Rand / After Rand

How did the invention of the paint tube change an artist's life?

Small tube. Big change!

Artist A: Before the Tube

Imagine you are an artist in 1835.

1 What would you need to carry?

Make a list of everything you think you would need to take with you.

- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

2 How would you store your wet paint?

Think about how you would keep your paint from drying out on the journey or while working.

_____

_____

_____

_____

3 How easy would it be to paint outdoors?

Consider the weather, your equipment and your paint.

☐ Very easy ☐ Quite easy ☐ Not very easy
☐ Difficult ☐ Very difficult

Why do you think so?

_____

_____

_____

Artist B: After the Tube

Now imagine you have several tubes of prepared paint.

1 How has your equipment changed?

Make a list of what you would now take with you.

- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

2 Which artist has more freedom?

Think about where you can go, how you can paint and what you can experiment with.

- ☐ Artist A (before the tube)
- ☐ Artist B (after the tube)
- ☐ Both are equally free

Why do you think so?

_____

_____

_____

_____

_____

_____

Historical Comparison

Older children: turn this into a short historical comparison.

Include:

- how each artist prepared and carried their paint
- the challenges they faced
- how the paint tube changed things
- which period you would rather be an artist in and why

The paint tube didn't just change how paint was stored – it changed where, when and how artists could work.

Think About It

- Which artist has the most freedom?
- What do you think was the biggest challenge for artists before the tube?
- What new opportunities did the paint tube create?
- How might the invention of the paint tube have influenced the kind of art that was made?

Small invention. A much bigger world for artists.

Paint Like an Outdoor Artist

Look, really look!
Outdoor artists paint what they can actually see – not just what they think it should look like.

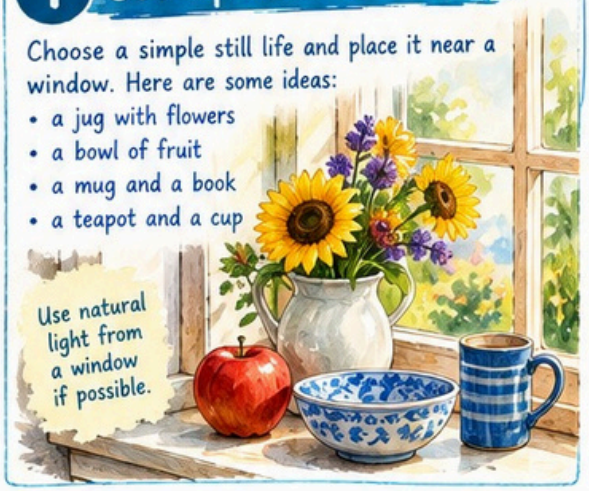
See it • Notice it • Paint it

Light changes. Colours shift. Details can be tricky!

1 Set Up Your Still Life

Choose a simple still life and place it near a window. Here are some ideas:

- a jug with flowers
- a bowl of fruit
- a mug and a book
- a teapot and a cup



Use natural light from a window if possible.

2 Choose a Limited Palette

You don't need lots of colours!
Use a small selection, for example:

ultramarine blue · cadmium yellow · burnt sienna · white

Mix colours if you need to, but keep your palette small.

3 Paint What You See

Don't copy a photograph. Look at your still life and paint what you can actually see in front of you. Notice the colours, shapes, light and shadows.

Take your time and really look at the details.

4 Younger Children

Focus on the big shapes and colours.

- What shapes can you see?
- What colours can you spot?
- Can you include the background?

Keep it simple and have fun!

Draw your still life here:

5 Older Children

Look closer and think like an artist.

Investigate:

- ☐ Changing light – how does the light change the colours and shadows?
- ☐ Shadows – where are they? What shape are they?
- ☐ Complementary colours – which colours make each other stand out?
- ☐ Colour temperature – which colours feel warm and which feel cool?
- ☐ Rapid observation – how much can you notice in a short time?

You might like to try a few quick sketches to capture the changing light!

6 Paint Your Picture

Use your limited palette to create your painting. Focus on what you see, not what you think it should look like.

Paint your still life here:

Think About It

- What did you notice about the light?
- How did the colours look different to the way they looked indoors?
- What was easier or harder than you expected?
- How did painting outdoors make you feel?

The Big Question

Why would portable paint have been useful for this kind of painting?

Same subject. Different light. A whole new world of colour!

Look closely • Notice the light • Paint your world

Oil paint doesn't just dry – it changes! Find out how it happens and what to look for as it dries.

The Drying Experiment

Watch • Observe • Record • Discover

1 Set Up Your Experiment

Put small samples of oil paint onto identical pieces of card or a prepared painting surface.

Things you need:

- ☐ Oil paints (a few colours)
- ☐ Identical pieces of card or canvas
- ☐ A palette knife or clean stick
- ☐ Labels or a pen
- ☐ A safe, well-lit space

2 Make Your Samples

Use the same amount of paint for each sample. Keep the conditions as similar as possible.

Label each sample with the day.

3 Make Your Observations

Look closely at each sample each day.

Record any changes in:

- surface (smooth, rough, dull, etc.)
- gloss (shiny or matt?)
- stickiness (tacky or dry?)
- hardness (soft or firm?)
- colour (has it changed?)

Don't touch the paint unnecessarily!

4 Your Drying Record

Day	Surface (what does it look like?)	Gloss (shiny or matt?)	Stickiness (tacky or dry?)	Hardness (soft or firm?)	Colour (has it changed?)
Day 1					
Day 2					
Day 3					
Day 5					
Day 7					

5 What's Going On?

Oil paint doesn't dry in the same way as watercolour or acrylic. It dries through oxidation and chemical changes.

Oxygen from the air reacts with the oil. • The oil forms a film and links with the pigment particles. • This creates a strong, solid paint film.

So it's not just water evaporating – it's a chemical reaction!

Think About It

- Which sample dried first?
- Which sample stayed shiny the longest?
- Did the colour change?
- Which sample felt hardest?
- Why do you think oil paint needs oxygen to dry?

You might notice that the colour becomes deeper and richer as it dries.

Challenge

If you have time, try this:

- Use different colours and compare how they dry.
- Try a thin layer and a thick layer of paint.
- What do you notice?

Extra for Older Children

Research why some colours dry faster than others. Can you find out about the role of linseed oil, alkyds or added driers?

Same paint • Same surface • Different days • Amazing changes!

Oil paint doesn't dry just because water evaporates.

So what is really happening?

What Happens to the Oil?

It's not just water that makes paint dry!

It's a chemical process called oxidation!

1 The Big Question

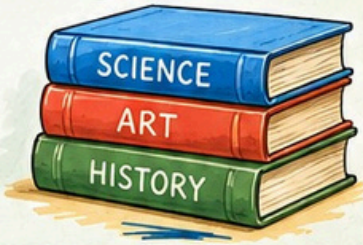
If oil paint doesn't dry simply because water evaporates, what is happening?

2 Research Time

Find out about these key words. You can use books, trusted websites or ask an adult for help.

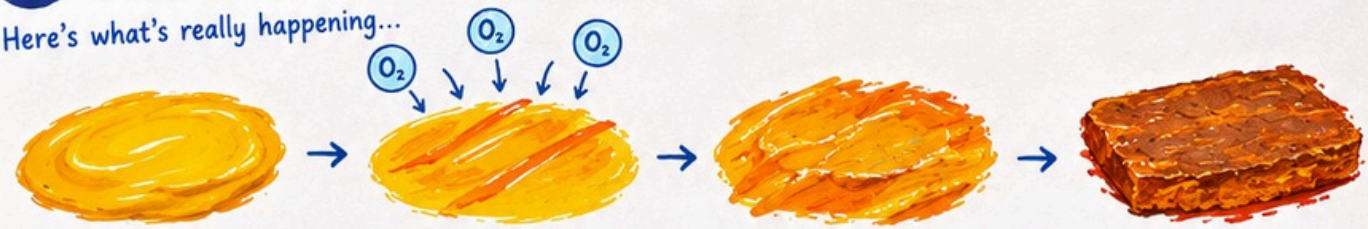
- ☐ oxygen
- ☐ oxidation
- ☐ polymerisation
- ☐ drying oils
- ☐ linseed oil
- ☐ paint films

Look for simple definitions, then write your own explanation in your own words.



3 The Process

Here's what's really happening...



1. Fresh paint
The pigment is mixed with a drying oil (such as linseed oil).

2. Oxygen gets in
Oxygen from the air reacts with the oil at the surface.

3. Chemical reaction
The oil molecules join together (oxidation and polymerisation).

4. Paint film forms
The oil becomes a solid film, which hardens over time (from the outside in).

4 What Happens to the Oil?

In your own words, explain:

- How oxygen helps the paint to dry.
- Why this is different from water evaporating.
- What role linseed oil plays.
- How the paint film is formed.

Same paint • Different process • Amazing result!

5 Diagram Challenge

Draw a simple diagram to show what happens as liquid oil becomes a solid paint film.

Label each stage and use your research to help you.

6 Think About It

- Why do you think some paints dry faster than others?
- How might the type of oil affect the drying time?
- What could happen if there wasn't any oxygen?
- How do you think the thickness of the paint layer affects the drying process?

Science helps artists turn liquid into lasting beauty!

Look closer • Ask questions • Discover the science!

Imagine you are an artist in 1850.

You need to spend the day painting outdoors.

You can take only ten objects.

Invent an Artist's Backpack

Plan • Choose • Think • Create

What will you choose?

Here are some ideas...

You might want to take:


paint tubes


brushes


palette


easel


canvas


water


cloth


sketchbook


hat


food

1 Choose Ten

Look at the list and decide which ten objects you will take.

Write your choices here:

1. _____ ☐
2. _____ ☐
3. _____ ☐
4. _____ ☐
5. _____ ☐
6. _____ ☐
7. _____ ☐
8. _____ ☐
9. _____ ☐
10. _____ ☐

Think about what will help you paint, stay comfortable and be prepared for the day.

2 Remove the Tube

Now take the paint take out of your backpack.

What changes?

How will you manage without it?

You might need to find another way to carry paint or prepare it differently!

3 Think About It

How did the lack of a paint tube change your choices?

What does this tell us about how packaging can influence technology and the way people work?

A small change in packaging can make a big difference!

Same goal • Different tools • New challenges

The Paint Tube Timeline

Paint has been around for thousands of years, but it wasn't always easy to carry or keep fresh...

From messy jars to modern tubes – a small invention with a big impact!

...until someone found a better way to store it.

Ancient times – early 1800s

1 Traditional paint storage

Artists originally stored paint in jars, pots, or small containers. Paint could dry out, leak or become contaminated.

1830s

2 Rand's invention

American artist John Goffe Rand experimented with ways to keep paint fresh and portable.

1841 (U.S.)

3 1841 patent

Rand's U.S. patent was dated 11 September 1841. British patents followed in 1841 and 1842.

1841–1842 (British)

4 Development and commercial manufacture

Improvements were made to the design, and tubes began to be manufactured on a larger scale.

1850s–1860s

5 Portable painting

Tubes made it possible to take paint outdoors, opening up new ways of working and new inspirations.

1860s–1890s

6 Nineteenth-century artists

Artists like Monet, Turner and many others used portable paint tubes to create work outdoors and in different locations.

20th century

7 Modern aluminium tubes

Aluminium tubes became the industry standard. They were lightweight, strong and kept paint fresh for longer.

Late 20th century – present

8 Modern plastic tubes

Today, many paints are also sold in plastic tubes, which are lighter, flexible and often easier to squeeze.

1 Create Your Timeline

Cut out the events above and put them in the correct order.
You can use the dates to help you.

You could also draw your own timeline and add pictures or short notes.

2 Evidence or Interpretation?

Which parts of the timeline are definitely supported by evidence? Which parts are interpretations or guesses? Think about:

- what written records exist?
- what physical objects have been found?
- what might be assumptions or later conclusions?

Not everything in history is a fact – some of it is a guess!

3 Find the Facts

Rand's U.S. patent was dated 11 September 1841, while British patents followed in 1841 and 1842.

Can you find the exact dates on a timeline? How does this fit with the other events?

U.S. patent: 11 Sept 1841
British patents: 1841 & 1842

Think About It

- Which invention do you think had the biggest impact?
- How did the paint tube change the way artists worked?
- What might have happened if the tube had never been invented?

Small changes can make a big difference in the world!

Better storage → Fresher paint → More freedom → New ideas → A lasting legacy

From animal bladders to aluminium tubes... packaging has helped artists paint, travel and create.

Packaging Through History

Same goal... different ideas!

Artists have always needed a way to store and transport paint. Over time, the containers changed.

Same paint... new solutions!

1 Animal Bladder

(ancient times)

Paint was sometimes stored in animal bladders, which were flexible, lightweight and easy to carry. However, they could leak and didn't protect the paint well.

Practical, but not very reliable!

2 Glass Container or Syringe

(18th century)

Glass containers and syringes kept paint more safely and allowed for more precise use, but they were fragile, heavy and expensive to produce.

Good protection, but not very portable!

3 Collapsible Metal Tube

(1841)

John Goffe Rand's 1841 patent introduced a collapsible metal tube. It kept paint fresher for longer and was much easier to transport and use.

A real breakthrough!

4 Modern Tube

(20th century – present)

Today, aluminium and plastic tubes are lighter, stronger, and easier to squeeze. They keep paint fresh for longer and are more convenient for artists of all levels.

Lightweight, durable and easy to use!

Let's Discuss...

Look at the four containers. Which one is:

- Easiest to transport?
- Easiest to dispense?
- The best protection for the contents?
- Easiest to manufacture?
- The one that produces the least waste?
- The one artists would choose?

There isn't one perfect answer... it depends on what matters most!

Invent the Future

Now it's your turn!

Imagine you are designing a paint container for 2050. What would it look like?

Think about:

- How will it keep the paint fresh?
- How will it be easy to carry and use?
- What new materials could you use?
- How will it be good for the environment?
- What would make it exciting for artists?

Draw your invention and add labels or a short explanation.

The next great idea could be yours!

Better packaging → Fresher paint → More freedom → More creativity

Artists have always experimented with colour. Now it's your turn to be a paint scientist!

Artist's Colour Laboratory

Mix • Test • Observe • Discover

Explore how different pigments and amounts of oil create different paints.

Same ingredients... endless possibilities!

1 Set Up Your Paint Laboratory

You'll need:

- pigments (e.g. ochre, ultramarine, red, yellow, green, white)
- linseed oil (or a drying oil)
- small containers or paint wells
- mixing sticks
- labels and notebook

Work with one pigment at a time.

2 Investigate One Pigment

1. Put a small amount of pigment in a container.
2. Add oil a little at a time.
3. Mix and observe the changes.
4. Record your results.

Look closely at:

- colour
- texture
- how it feels
- how it spreads

What happens when you add more or less oil?

3 Record Your Results

Complete the table for each colour you test.

Colour name	Pigment (grams)	Oil (grams)	Colour / texture notes	What did you notice?
1st Colour				
2nd Colour				
3rd Colour				

4 Older Children: Try Some Ratios

Make two mixtures with the same pigment but different amounts of oil.

For example:

- 5 g pigment + 2 g oil
- 5 g pigment + 4 g oil

Compare the results.

How does the amount of oil affect:

- the colour?
- the texture?
- the drying time?

5 Think About It

- Which mixture do you prefer and why?
- Does more oil always make a better paint?
- How might this knowledge have helped artists in the past?

This is simple quantitative investigation – just like real scientists do!

What You're Learning

- ☑ How pigments and oils work together.
- ☑ How to observe and record changes.
- ☑ How to compare results.
- ☑ How small changes can make a big difference in the final paint.

Science + Art = Better Paint!

One small tube made a big difference... but was it the most important invention in art history?

Was the Paint Tube a Great Invention?

Explore • Debate • Think Like a Historian

Finish with a family debate.
Take it in turns to argue, listen and respond. Use evidence from your research and what you have learned.

Team 1
The 'Yes' Argument

The collapsible paint tube was one of the most important inventions in the history of painting.

VS

Team 2
The 'No' Argument

The tube was useful, but artists would have developed new ways of working anyway.

Support your arguments with evidence.
Think about: how artists worked before the tube, how the tube changed what was possible, and what other factors might have influenced art.

Remember...
Technology can influence history, but rarely does one invention explain everything.

A Challenge for Older Children:
Reconstruct the Problem

Imagine you are an artist in 1840. You have mixed six colours of oil paint. Tomorrow you want to travel several miles from home to paint outdoors.

Your paint must remain wet and usable. Design a container.

You are given:
- paper
- cardboard
- clay
- string
- foil
- small containers
- modelling materials

Invent a solution. Test it. Improve it.

How would you keep your paint safe, portable and usable?

Then Reveal the Historical Solution

After your designs, learn about John Goffe Rand's collapsiblle paint tube (1841).

Compare your invention with Rand's tube.
What was similar? What was different?
Which do you think worked better and why?

This Is Engineering!

You're not just learning history – you're solving a real-world problem, using creativity, curiosity and critical thinking.

Paints may look beautiful today, but they can change over time.

Conservators help us understand and protect our artwork.

Become an Art Conservator

Look closely • Investigate • Protect the past

1 Look at Your Samples

Once the paint samples have dried, imagine that they are tiny pieces of a centuries-old painting.

What could happen to them over time?

What to Look For

Look closely at your samples. Can you spot any changes in:

- colour
- texture
- surface
- cracks
- gloss
- dirt

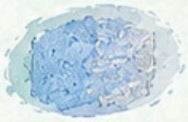
Small changes can tell a big story!

2 Research

Find out more about what can happen to paint over time. Explore these topics:

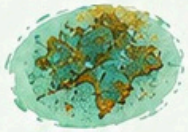
Yellowing
Can colours change over time?

Cracking
Why does paint crack?



Fading
What makes colours lose their brightness?

Dirt
How does dust and pollution build up?



Oxidation
What happens when paint reacts with oxygen?

Changes in the binder
How does the oil behave over time?

Pigment reactions
Can pigments interact with each other or with the surface?

Oil paintings are complex materials, and conservation scientists study the interactions between pigments and drying oils to understand how paintings change as they age.

3 Write a Conservator's Report

Older children can write a short report on their sample, including:

- ☑ Which colour you tested
- ☑ What you observed
- ☑ What you think is happening
- ☑ What might happen over a longer time
- ☑ How this knowledge helps conservators protect paintings

Colour tested: _____

Observations: _____

_____

_____

Possible causes: _____

_____

_____

What this means: _____

_____

_____

_____

My conclusion: _____

_____

_____

Why It Matters

Understanding how and why paintings change helps conservators decide how to:

- display artwork
- control the environment (light, humidity, temperature)
- clean and repair damage
- keep it safe for future generations.

For older children...

Turn your findings into a real Conservator's Report. You could even compare your samples and suggest which one might last the longest!

Look closer • Ask questions • Become a detective of the past