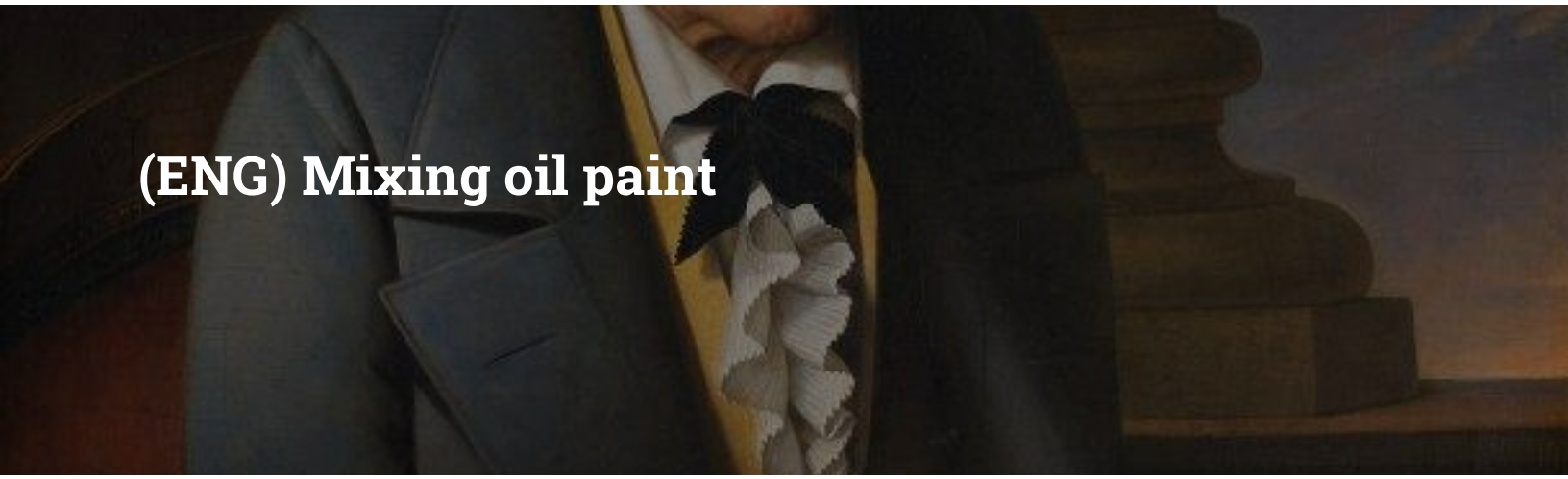


(ENG) Mixing oil paint

Introduction

Step 1 - Motivational Stage

Step 2 - Investigational Stage

Step 3 - Consolidation Stage

Introduction

#Online activity #In-class activity #Experiential #Artwork

Pupils will learn about the dissolution of substances and the factors that affect its rate. They will learn about oil paint, its ingredients, characteristics and the impact of paint tube on the development of painting. The pupils will then have to classify the ingredients of oil paint as solutions, solutes and solvents.

Learning Objectives

- [ ] Describe the process of dissolution
- [ ] Apply the chemical terms such as solution, solute and solvent to the art world

ACTIVITY DETAILS

Activity Details

Connection of the activity with Art

Oil paint , Painting

Link to local, national School Curriculum

Solution/Factors that affect the rate of dissolution of substances.

Equipment required

- Internet connection

Duration of activity

45 minutes

Sources

T. GERM, K. MAHNIČ, N. OSTAN, B. PODLIPNIK, Umetnostna zgodovina: slikovna zbirka za splošno maturo, Ljubljana 2008.

https://eucbeniki.sio.si/kemija8/1232/index1.html

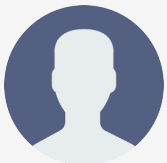
Photo credit:
Pic. 1:
Domenico Ghirlandaio (1449 - 1494)
An Old Man and his Grandson, 1490
Egg tempera on wood, 624 x 463 cm
Musée du Louvre, Paris
Copyright: RMN-Grand Palais (Musée du Louvre) / Franck Raux

Pic. 2:
Jožef Tominc (1790 - 1866)
Artist's Father, 1848
Oil on canvas, 90 x 74, 5 cm
National gallery of Slovenia, Ljubljana
Copyright: National gallery of Slovenia

Pic. 3:
Ivana Kobilca (1861 - 1926)
Summer, 1889 - 1890
Oil on canvas, 180 x 141, 5 cm
National gallery of Slovenia, Ljubljana
Copyright: National gallery of Slovenia

Step 1 - Motivational Stage

Ask your pupils to do the following experiment:



“Pour 100 ml of water into a bowl. Slowly start adding salt. Let the pupils observe what happens. Then start to mix the water. The salt will melt. Keep adding salt and see if there is a point when the salt doesn’t melt anymore. When that happens it means the solution has reached its saturation point.”

Step 2 - Investigational Stage

STUDENTS' TASKS

1

Task 1

Talk about dissolution and explain the terms solution, solute and solvent. Dissolution is a chemical process where the solvent dissolves the solute and forms a new substance called a solution. Explain the terms saturated and unsaturated solution. Use the salt exercise as an example; water is a solvent, salt a solute and salty water a solution.

Tell the pupils about the factors that affect the rate of dissolution: temperature, stirring and size of the solute if in solid state.

2

Task 2

The pupils will learn about oil paint.

Oil paint is a slow drying paint obtained by mixing pigment with oil, most commonly linseed oil. In some recipes, beeswax is also added to the mixture.

"How can we make sure the pigment mixes well with the oil?"

If the pigment comes in lumps, we must break them apart so that the pigment dissolves easily.

Because oil paint dries slowly, it allows the artist to work gradually and make corrections or changes. They also blend nicely with each other, which makes the transitions between different shades almost seamless.

Artists can also build up the colour by applying thin layers of paint one on top of the other. In order to do that, the paint must be diluted by a solvent. Turpentine is a solvent often used for thinning oil-based paints as well

as white spirit, which is an inexpensive replacement for the turpentine. White spirit can be also used to clean brushes.

As the interest for naturalism increased in the 15th century, oil paint with its ability to portray precise details and delicate light effects started to replace tempera as the technique of choice. Tempera is a quick drying technique where the pigment is mixed with egg yolk.

Show two paintings, one made with tempera and another with oil to show the difference.

Pic. 1: Domenico Ghirlandaio, An Old Man and his Grandson, 1490 (tempera)

Pic. 2: Jožef Tominc, Artist's Father, 1848 (oil)

Paint tubes were an invention of the 19th century that brought about a different approach to painting. Previously the painters or their assistants had to mix the colours on their own and store them in pig bladders. Pig bladders are stretchable and lightweight and the painters would make a hole in them when they wanted to use the paint stored in it. With the invention of paint tubes, however, paint was industrially produced in large quantities. The tubes also came with caps, which prevented the paint from drying.

Easily accessible, with a variety of colours, the paint tube changed the approach to painting. It allowed artists to leave their studios and paint outdoors. The plein air painting is characterized by its light palette, experimenting with light and loose brushstrokes. It eventually led to Impressionism. The paint of choice for the painters was, again, oil paint.

Show the pupils an example of a plein-air painting.

Pic. 3: Ivana Kobilca, Summer, 1889-1890.

3

Task 3

Let the pupils work in pairs. They must classify the ingredients of oil paints as solutes, solvents and solutions, as shown in the grid below:

SOLUTE	SOLVENT	SOLUTION
pigment	linseed oil	oil paint
beeswax	turpentine	
	white spirit	

4

Task 4

Aside from oil paint, artists can also use different techniques such as tempera, gouache and acrylic paint. Gouache is a technique similar to watercolours, the pigment is mixed with water and a type of gum (gum arabica). With acrylic paint, the pigment is mixed with various chemicals.

Divide the pupils into groups.

Each group must choose one art technique. The pupils will then use the internet to find out what is the solvent used for their specific technique and find one painting as an example.

Step 3 - Consolidation Stage

Ask pupils to reflect:

"What are some examples of dissolution in everyday life?"

Example: putting sugar into coffee. Sugar will melt faster if its crystals are smaller and the coffee hotter.

Explain that most solutes dissolve better with higher temperatures.

End of the activity

EXIT