

AI/MACHINE LEARNING LEARNING TASK

# Painting with Music

## Learning area

The Arts – Visual Arts and Music

## Year level

Year 7 & 8

## Duration

50 to 60 minutes

## Task summary

This task enables students to explore art-making with music using machine learning technology. It gives students some insights into the work of synesthetic artists like Wassily Kandinsky.

## Session overview

Students can express their ideas of how visual art and music intertwine when completing a ‘musical painting’ using a machine learning tool.

## Digital technologies

- VR
- AR
- Robotics
- Drones
- Other: AI/Machine Learning

## Required resources

### Hardware:

- iPads / tablets
- Interactive whiteboard or smartboard

### Video:

- [What's the Sound of Colour? Kandinsky and Music \(10:12\)](#) - This video gives some background information on the artist Wassily Kandinsky, a synesthetic who is able to see colours and art with music.

### Apps:

- **Google Arts and Culture** - This is for creating a “music painting” based on machine learning technology. Download the app via [Play Store](#) or [Apple App Store](#). Students may also opt to use the web version of the [‘Paint With Music’](#) experiment via iPads or tablets. As an optional activity, students may also explore the experiment, [‘Play a Kandinsky’](#) via the web or the app.

## Teaching resources:

- [Teaching deck](#) - download a copy for your own use.

## Other resources to try (optional)

N/A

## Planning and preparation

*NOTE: This learning task may be introduced in the middle or at the end of the unit.*

### Assumptions:

- Students may or may not have some background on the topic of synaesthesia.
- Students may or may not be familiar with the artist, Wassily Kandinsky.
- Students would have some background in machine learning. If not, teachers may opt to give a brief introduction to what this means and how this relates to the app that the class will be using for this lesson. [Digital Technologies Hub](#) has lots of resources for teachers to utilise.
- Students would have some basic knowledge of how to generate QR codes using a link.

### Additional preparations for teachers:

- Ensure all devices are fully charged and in working condition.
- Ensure the required apps are installed, updated, and operational.
- Teachers should view/trial the suggested tasks to make sure that they're appropriate for their students.
- If teachers wish for students to submit the task to [Canva Whiteboard](#), they can copy the [Painting With Music Canva Template](#) and use it to create a new whiteboard for class collaboration. Make sure to get the link to share with the class. Alternatively, on Google Classroom, you can create a class and assignment and assign it to students. If you don't use Google Classroom, students can just copy and share the links to their creations via email or a learning management system.

## Task Sequence

# 1

## Introductory activity / Provocation (15 mins)

Using the teaching deck, show students the video on slide 2, [What's the Sound of Colour? Kandinsky and Music](#) (10:12).

After watching the video, conduct a brief class discussion and ask the students:

- What have you learned about Kandinsky?
- What have you learned about the condition, 'synaesthesia'?
- Can you imagine being able to paint with music? How do you think you could do it?

## 2

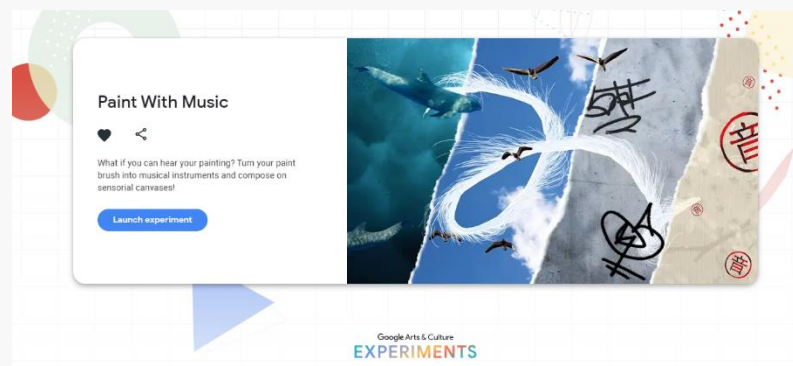
Using slide 3, ask students what else they may already know about Kandinsky, synaesthesia, and using music for art creation.

### Prior knowledge check (5 mins)

## 3

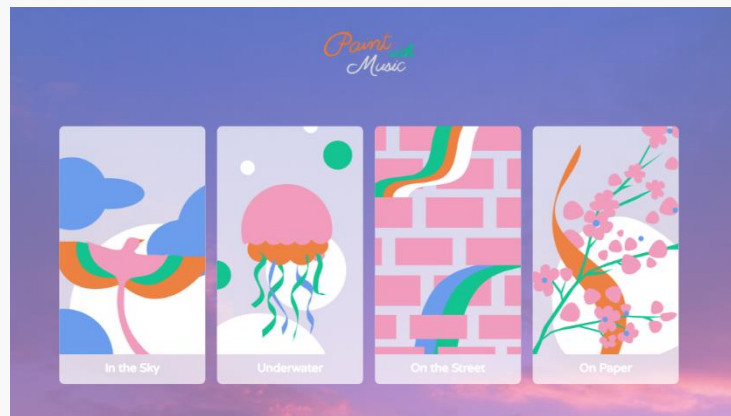
### Activities (30 mins)

1. Tell students that they will get the opportunity to paint with music in this lesson using machine-learning technology. If students are not familiar with machine learning, you can briefly mention the following (slide 5):
  - Machine learning is a way of teaching computers to learn and make decisions on their own.
  - In this app we're going to use today, Google engineers have used something called Magenta's DDSP (Differentiable Digital Signal Processing) to code the computer to be able to turn drawings and brush strokes on the screen into various musical instruments all on its own.
2. Get students to launch the Google Arts and Culture app (Download via [Play Store](#) OR [Apple App Store](#)) using slide 6.
3. Go to the 'Paint with Music' experiment. Use the search function to find the activity under 'Experiments'. Students may also opt to use the web version of the "[Paint With Music](#)" experiment via laptops or tablets.

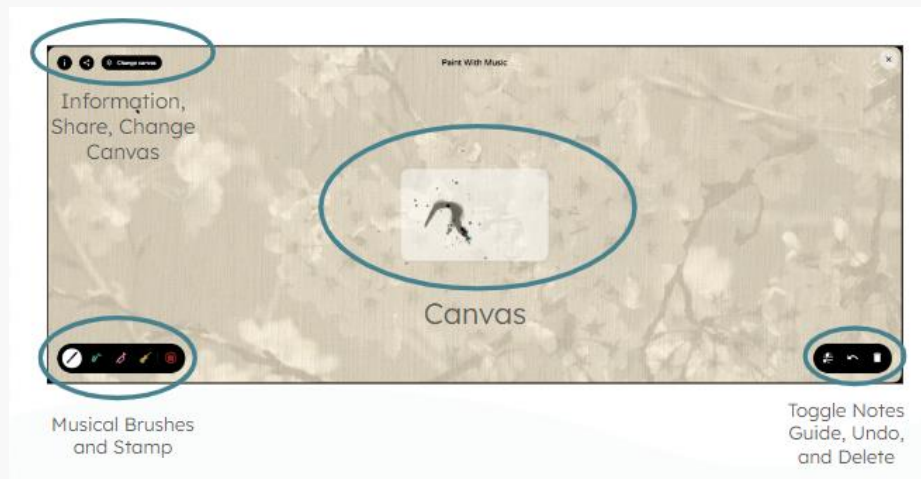


4. In Google Arts and Culture's 'Paint with Music' experiment, there are four theme options: In the Sky, Underwater, On the Street, and On Paper. Each theme would come with its own set of 'brushes', sounds, colours, and other effects.

# Learning task



5. Give each theme a brief demonstration to show students some of its main functions. Slide 8 explains:
  - The middle part is the canvas. It's where students will see their creations unfold.
  - The bottom left shows various musical 'brushes' using different instruments that are used as notations, including some organic options (i.e., Oriental sounds when using the stamp as notation for the 'On Paper' theme, whale sounds for 'Underwater', bird sounds for 'In the Sky' and a scratching sound as well as a "Yo" sound for the 'On The Street' theme.
  - The top left shows some information about the experiment, a share icon, and a way to start over.
  - The bottom right is a delete button that enables the user to erase their existing work and begin again.



6. Get students to test all four themes so they can select one that they like best. They can then focus their creation on their chosen theme.
7. Share an example of a 'Musical Painting' creation using this tool, slide 9, if needed (optional) -



View and listen to this  
Musical Painting  
By Shai Coggins

## 4

### Check for understanding (5 - 10 mins)

Once students have completed their work, get students to select the 'share' icon (top left hand). Students may directly share on Google Classroom if teachers use this platform. Otherwise, students can just copy the link and share it accordingly.

Students can also get into groups of 2-3 to present their work and discuss:

- What inspired them to create this work?
- What did they think about being able to hear their paintings?
- How did the music affect the way they painted their creations?

#### Differentiation for students with additional needs

Some students may opt to work with a partner instead of doing this task by themselves.

#### Extension ideas

As an optional add-on activity, get students to explore the experiment, '[Play a Kandinsky](#)', via Google Arts & Culture website OR search for 'Play a Kandinsky' on the app.

#### Video tips

How to create and share a 'Painting with Music' creation.

## Curriculum Connections

### Australian Curriculum Version 9.0

#### Year 7 and 8 - Visual Art

Reflect on the ways that they and other artists respond to influences to inform choices they make in their own visual arts practice (AC9AVA8D02)

Select and manipulate visual conventions, visual arts processes and/or materials to create artworks that represent ideas, perspectives and/or meaning (AC9AVA8C02)

#### Year 7 and 8 - Music

Compose using the elements of music and compositional devices to communicate ideas, perspectives and/or meaning, and notate, document and/or record the music (AC9AMU8C02)

### Cross-curriculum priorities

- Aboriginal and Torres Strait Islander Histories and Cultures
- Asia and Australia's Engagement with Asia
- Sustainability

### General capabilities

- Literacy
- Numeracy
- Digital Literacy
- Critical and creative thinking
- Personal and social capability
- Ethical understanding
- Intercultural understanding