**Background information**

**Title:** *Give a title that helps easily recognise the content focus and purpose of the Art-based STEAM activity*

**Brief Description:** *Provide a description of no more than 30 words outlining the scope of the Art-based STEAM activity, descriptive enough to help the user in the first instance to estimate its possible relevance to her/his interests.*

**Keywords:** *A limited number of words/short phases reflecting the topic and scope.*

**Target audience:** *The intended end user(s): teacher with students, teacher, students, scientists, artists, others*

**Age range:** *e.g., 6-9, 9-12, 12-15, 15-18*

**Context(s):** *The place(s) that the Art-based STEAM activity involves: school, science museum/centre, research facility, independently on the web, combination of the above, etc.*

**Time required:** *The approximate time typically needed to realize the Art-based STEAM activity. This could be distinguished into the amount of time required for school-based work and out-of-school based work (e.g., visit to science museum/centre, homework, etc.)*

**Technological tools required:** *Description of any special technologies (e.g., AR), infrastructure (e.g., digital platform) and/or technical expertise required for the realization of the Art-based STEAM activity.*

**Author(s)’s background:** *What was the main function of the person who prepared the Art-based STEAM activity: school teacher; science museum/centre educator; science communicator, scientist, parent; combination of the above, etc.*

**Connection with the curriculum:** *Reference to the items of the science learning vocabulary mainly covered by the Art-based STEAM activity, and prerequisite knowledge.*

**Learning objectives:** *A short description of the objectives of the described Art-based STEAM activity and how these objectives relate to STEAM education. For example, you may want to describe briefly what the students will be doing in terms of Science, Technology, Engineering, Arts, and Mathematics.*

**Guidance for preparation:** *Guidance provided by the author(s) of the Art-based STEAM activity about any necessary arrangements that will need to be made by the interested teacher(s) before launching the activities described in the following sections.*

One way to mix Arts with STEM is to use a scientific research-like process to create

**TEMPLATE 1: Create an artwork inspired by a scientific idea, phenomenon or process**

A suggested step-by-step guide for creating an artwork inspired by a scientific idea, phenomenon or process is to follow a scientific research-like process. To do so, students may want to utilize the following tools that can help them in the art making process:

* A *Journal* to record ideas, feelings, impressions, notes, test ideas;
* *Mindmaps* to help them unfold and connect with your narrative or messages your artwork intends to communicate to your audience;
* *Moodboards* to keep track of tools, ideas, methods, feelings, inspiration;
* A *Collection of Artworks* for inspiration and boosting creativity;
* A *Folder* to collect and share materials.

An example of such an approach is the following:

*Dive into the subject by looking at it from a scientific point of view.*

1. **Setting the scene**

Do a small hands-on activity related to the subject at hand so you can introduce the topic from a scientific point of view. As above, the activity could be a short scientific inquiry (experiment) or a hands-on STEM project.

Suggested Tools: Journal

Search on your subject for different types of Art related to your subject.

1. **Look around**

Search on your subject for different types of Art related to your subject.

* Decide what type of artworks you are looking for (e.g., paintings, collages, sculptures, video installations, etc.);
* Look for renowned artists/artworks throughout the eras;
* Collect different artworks and select those that speak to you the most.

Suggested Tools: Journal

*Elaborate on the artworks collected and try to understand what the artist is trying to*

1. **Investigation – Part 1**

Elaborate on the artworks collected and try to understand what messages the artist is trying to convey and how she/he worked.

* Look for accompanying content on the artwork (description, commentary, artist’s interview and trivia);
* Try and understand how the artist has worked to put the artwork together (methods, practices, process, tools, materials);
* Reflect on what the artwork means to each of the students;
* Reflect on what the artist is trying to say through her/his work.

Suggested Tools: Journal, Folder, Moodboard

*Reflect on the artwork and understand what it means to the students.*

1. **Investigation – Part 2**

Reflect on the artwork and understand what it means to the students.

Encourage students to:

* Draw inspiration from the artwork collected;
* Reflect on what the message they want to communicate is;
* Think about ways to communicate their messages through different means of expression;
* Think about how the artworks studied can help students create their own art;

Suggested Tools: Journal, Moodboard, art activities

*Create your own art*

1. **Creation**

Create your own artwork.

Students can:

* Deploy methods and processes and tools students learned about;
* Make a blueprint of their artwork;
* Experiment and try new things;
* Consider the use of technologies (e.g., AR) to help them communicate best the message(s) of their artwork
* Reflect on their work to see if the end product does communicate the message they wanted.

Communication – Discussion

1. **Communication and discussion**

Present the artwork.

Take some time and ask students to present their work. During this part you could do the following:

* Ask students to write an accompanying article talking about their art, their inspiration and the message they wished to communicate;
* Have a session where students present their artwork and ask other students to comment on it before the artist-student explains his/her point of view;
* Guide students to comment not on whether they like the artwork or not but on what they see/feel/think when looking at the artwork, what message does it communicate to them, what is the thing that engaged them most about it.
* Ask the artist-student to explain his/her point of view;
* Reflect and discuss on the artwork after the artist/student presents his/her rationale. Discuss whether new ideas for other artwork come up during the reflection session or if the artist/student would like to make some changes to the artwork.

Suggested Tools: Journal

1. **Use art to communicate science in an engaging way**

Another way to use art in conjunction with STEM is to invite students to become science communicators. According to this approach, students act as STEM ambassadors by getting engaged with activities that are closely related to activities that aim to open-up schools to local societies (Open Schooling approach). Students can create artworks around Science and STEM and then use them to inform their local communities about it and increase citizens’ knowledge on STEM disciplines and their appreciation of them based on how they contribute in facing contemporary challenges and meet the needs of todays’ societies. You can make this kind of activity as part of a bigger project that is based on the Open Schooling approach and integrate it as one of the tasks students will have to work on.

An example of such an approach is the following:

1. **Setting the scene**

Start your work again like in the setting the scene phase presented above so students can dive into the subject at hand. To achieve maximum impact, make sure the activity is directly related to everyday life or a contemporary problem. This way students will find meaning into what they are learning and be more engaged.

1. **Conceptualisation**

Ask you studentsto reflect on the activity they did and decide what are the main messages they wish to communicate through their art. After deciding on that, it is time to decide what kind of art they wish to create and if/how they will collaborate with their peers. Is it going to be a theatrical play? Is it going to be a painting? It is also a good idea to decide now how the final presentation of the entire class’ work is going to happen and what kind of event you will organize (see more on the Discussion phase).

1. **Investigation / Creation**

Once the context is decided it is time for students to do research on the subject at hand so they can dive in and then create their Art. You can refer to the first section (Drawing inspiration from STEM) for more information on how to facilitate your students during this process. You can also use an inquiry science activity to help your students deepen their knowledge on the subject.

1. **Demonstration / Reflection**

Askstudents to present their artworks and do a reflection session on them as described above so students can have a chance to receive feedback and possibly make some changes in their artwork. This phase will help your students’ ‘demo’ their artwork and see if the message they wished to communicate is getting across to their audience.

1. **Presentation**

Once the artworks are finalized it is time to present them to the local community. This can be done in numerous ways. Here are some ideas:

* a school event where students’ families and friends are invited;
* a local Science and Art festival;
* a social media campaign;
* a public event in a central point of their city or town.

Reviews from participants is what usually follows a premiere of a movie or an art exhibition. Likewise, regardless the way you choose to communicate students’ work it is important to collect some feedback on the impact of the event to citizens. Consider putting together a small reflection questionnaire for participants or ask students to do some interviews. This way students can get an idea of how their work affected the local community and feel empowered to uptake more active roles in other citizen-related initiative as well.