COACH ART connect | starlight children's foundation

In partnership with

Photography Part 1 of 2

ages 5-10

Captain Starlight, here!

I just landed on Earth with some exciting news:

Starlight Children's Foundation has partnered with the organization **CoachArt** to work together to add fun STEAM (Science, Technology, Engineering, Art, Math) lessons into all the activities! How cool is that?!

Over the next few weeks, I will lead you and your student through four action-packed lessons using these nifty curriculum guides!

Did you know kids learn best when they are having fun? That's why I have thoughtfully sprinkled in a **STEAM** learning moment into each exciting lesson. Make sure you highlight those as you work your way through this curriculum guide.

If you have any questions throughout your mission, check out the Coach Corner website or email ***match@coachart.org.***

Now, buckle up and get ready to blast off in *3...2...1!*

Photography 101: Lesson 1

Seek and Find Camera Basics

- Skill Level: Beginner
- STEAM: Visual Arts
- Adult Helper Required: As needed
- Recommended: Ages 5-10

Did you know that the invention of the camera has enabled people to "capture" moments? When you look at a photo later, you can almost relive that moment again. Today, digital cameras make taking pictures easy.

Activity One: 15 minutes / Activity Two Time: 30 minutes / Coaches Noets: 10 minutes

Learning Objective:

- To teach students the basic elements of photography.

At the end of this module, students will be able to:

- State two basic parts of a camera.

What you need:

- Smartphone or digital camera

Activity 1: Parts of a Camera

The focus of this activity is to familiarize students with the basic elements of a camera.

Directions: Have student point to each element of the camera after the definition. Today, the most used camera is digital. Anyone with a cell phone has a digital camera. All cameras have the same basic elements:

- **Camera:** It's what you use to take pictures. On your smartphone, it's found in the form of an app.
- **Viewfinder:** The part of a camera you use to compose a picture. Think of it as a picture frame.
- **Flash:** The flash is a portable light source, meaning it is always with the camera and you can turn it on whenever you need it.
- **Lens:** The lens on a digital camera (DSLR) is a combination of curved glass that light travels through before reaching the sensor or film inside your camera. Some cameras feature interchangeable lenses, those are lens that you can remove and replace with a new lens that let you see things far away or wider.

Activity 2: Scavenger Hunt

Have students find the following things and take a picture of them:

- Something red
- Something wet
- Something moving
- Something fuzzy
- Something beautiful
- Something yucky
- Something alive
- Something very close
- Something far away

Which of the photographs you took is your favorite, and why? Which was your least favorite, and why?

Coaches Notes – Photography Basics

Photography Learning Term of the Week:
Pixels: The tiny dots that make up a digital photo. The individual dots are so small, they're hard to see with the naked eye. But together they create a picture.

STEAM Visual Art Question of the Week: What is a traditional film camera?

A traditional camera is a lightproof box. Light from the subject passes into the camera through a lens or lenses. The lenses focus the light onto film stored in the camera. Then chemical coating on the film reacts to the light and records the image. The photographer can then remove the film from the camera in a darkroom, and use special chemicals to print the image on special paper.

STEAM Science Word of the Week:
Chemical Reaction: A process in which one or more substances are converted to one or more different substances. A chemical reaction is needed to change traditional film into a photographic print.

SHARE YOUR EXPERIENCE
Enjoy your time together, and email your photos & stories to photos@coachart.org at "original" (maximum) size.

Early Photography: Lesson 2

Camera Obscura

- Skill Level: Beginner
- STEAM: Visual Arts
- Adult Helper Required: As needed
- Recommended: Ages 5-10

Lesson: 10 minutes / Activity: 30 minutes / Coaches Notes: 10 minutes

Today, photography is used everywhere. Companies use photos to sell their products. For example, photos of delicious-looking food might make us want to buy it. Because smartphones have cameras, many people can be photographers. Let's journey back in time to see how it all started.

At the end of this module, students will be able to:

- Understand how early cameras worked.

What you need:

- Empty cereal box
- The plastic bag that came inside the cereal box
- Pen or marker
- Duct tape or electrical tape
- Scissors
- A pushpin or thumbtack

What do you think the first camera looked like?

Before the invention of special photosensitive paper, people were experimenting with ways of capturing an image of the world with a box they could look through. The **camera obscura,** which means "dark chamber" in Latin, became one of those ways. A camera obscura is an early way that people took photos. This box-like device, led to the invention of photography. Today, you're going to journey back in time and build your own camera obscura that will allow you to see the world in a very different way!

What to do:

1. **Adult helper:** Carefully cut out a big square in the front of the cereal box.
2. Tape the plastic bag "screen" over the square.
3. Use a thumbtack/pin to make a small hole in the box on the side opposite to the screen.
4. Turn out the lights so the room is dark on the "screen" side of the box.
5. Aim the side of the box with the pin hole towards a bright scene, such as a television.
6. Look at the "screen."

What did you see?

- Did you see something on the screen?
- Was anything unusual about it?
- Experiment with the size of the pinhole. Larger holes allow more light but reduce the focus, resulting in a blurrier image.

Coaches Notes – Light In Motion

Photography Learning Term of the Week:
Focus: Your shot is "in focus" when the object or person you photograph is as clear and sharp as possible. Most cameras allow you to adjust the focus.

STEAM Visual Art Question of the Week:
Why do objects look upside-down in a camera obscura?

When you look at objects using a camera obscura, objects can look a little strange and even different because of the way light is moving through the pinhole. Remember, the objects you are looking at are much larger than the pinhole. So the light that is reflecting off them travels in a straight line. When the light from the top of the object goes through the pinhole, it's moving down towards it. The opposite is true of the light from the bottom of the object: it moves up to the pinhole and ends up on the top of your wax paper! Think of it like spraying a garden hose through a little hole in the fence. If you spray from above the hole, the water will shoot down out the other side, and if you spray from under the hole it will shoot up when it comes out.

STEAM Science Word of the Week:
Photosensitive: A paper coated with a light-sensitive chemical formula, like photographic film, used for making photographic prints.

Finding Your View: Lesson 3

Perspectives: Angles and Lighting

- Skill Level: Beginner
- STEAM: Visual Arts
- Adult Helper Required: Yes
- Recommended: Ages 5-10.

Activity One: 30 minutes / Activity Two: 20 minutes / Coaches Notes: 10 minutes

Have you looked at a photo where one a person looks really big, and another person looks really small? Today we are going to talk about why some objects appear larger or smaller in a photo.

At the end of this module, students will be able to:

- Understand why lighting and angles are important to a photographer.

What you need:

- Empty cereal box
- Scissors
- Smartphone or digital camera

Activity One: Let's Make a Viewfinder

Adult helper assistance needed for students ages 5-7.

1. Cut the flap parts off the top of the box.
2. Carefully, using scissors, cut along one side of the box.
3. Carefully, using scissors, cut along the other side on the box.
4. Now cut along the bottom.
5. You should now have a rectangle.
6. Adult helper assistance. Cut the middle of the rectangle out, leaving approximately a 1-inch border.

Looking through the viewfinder, have student locate different objects to look at. Standing closer to something will make it appear larger. Standing further away will make the object look smaller. Let the students explore for a few minutes.

Now let's use the viewfinder.

- Have the student find a circular object, a square one, and a rectangular one. Have the student stand closer, then farther, from each object while looking through the viewfinder they made. Have the student determine how far away they need to be to fit each object in their viewfinder.

Let's consider the angles.

Photographers try to look for the best angle to take a photo. They might photograph something from above, or from below.

- Have the student photograph the circular, square, and a rectangular objects they found. For each object, have the student take the photo while holding the camera at the same level as the object, then while holding the camera lower than the object, then while holding the camera higher than the object.
- Compare the photos.
- Ask: How do the different angles affect the appearance of the objects in the photos?
- The Concept of Light and Dark

Activity Two: Photographing With More or Less Light

When you walk into a dark room, how well can you see?

A camera lens, like your eyes, can't see much in the dark. To see better in a dark place, you might need to turn a light on. When taking a photo in a dark place, you might need a flash. But a flash can be used in a bright room too, depending on the results you want.

For this activity, the student will need their camera. Have the student go to a dark room.

1. Have the student choose an object in the room, and photograph it with no flash.
2. Have the student photograph the object with a flash.
3. Have the student turn on a light in the room, and photograph the object with no flash.
4. With the light still on, have the student photograph the object with a flash.
5. Compare the results. How does the lighting affect the pictures?

Coaches Notes – Too Much of a Good Thing

Photography Learning Term of the Week:
Background: The area behind the subject, farthest from the viewer.

STEAM Visual Art Question of the Week:
What happens if you take a picture and there is too much light?

Remember, we said that camera lenses are like your eyes. If the light is too bright behind your subject, like when the sun shines in your eyes, the camera lenses won't be able to be deal with the light, just like your eyes. The photo would not show your subject very well and most likely you would just get a photo of the sun's rays.

The Big Picture: Lesson 4

Composition

- Skill Level: Beginner
- STEAM: Visual Arts
- Adult Helper Required: Yes
- Recommended: Ages 5-10

Activity One: 25 minutes / Activity Two: 20 minutes / Coaches Notes: 10 minutes

The "subject" of a photo is the main thing. In a photo of a dog, for example, the dog is the subject. Photographers often have favorite subjects. What subjects would you most like to photograph?

What is Composition?

- Composition in photography is how people or objects are arranged in the photo. This is part of the art of photography. How can you arrange things to make them more interesting? More spooky? More funny?
- If you took a photo of your family or friends, how would you arrange them? Standing or sitting? Who is next to who? Why?
- Remember, photography is a form of storytelling.

What you need:

- Digital camera or smartphone
- Round object
- Rectangular object
- Spherical object
- Viewfinder frame, optional

Activity One: The Arrangement

Have the student place a round, rectangular, and spherical object on a table. Have the student take a photo, then review.

What do you see? Which object is your center of attention?

- Now, have the student think about the placement of each object.
- Ask: Which object do you want to be the center of attention?
- Have the student rearrange the objects however they like, while keeping in mind that the objects should fit inside the camera frame.
- Ask the student to take another photo, then review.

How does the different arrangement of the objects make photos look different?

Is the center of attention different in each photo? Why?

Do you like how the objects are arranged?

What do you think these photos tell a viewer about the photographer?

The Rule of Thirds

Photography has rules, sort of like the rules you follow at school or home. In photography, some rules are simply suggestions. The Rule of Thirds is that kind of rule. Imagine a grid that divides your photo into three columns and three rows. According to the Rule of Thirds, your photo will be most interesting and well-composed if the subject of your photo is in the left third or the right third of your photo -- or in the top third or the bottom third. Many people prefer to put the subject of their photo right in the center. But try taking some photos using the Rule of Thirds!

Adult Helper Assistance may be needed to turn on gridlines on a smartphone:

iPhone:
- Go to Settings
- Click "Camera"
- Under Composition, select Grid and toggle on.

Android:
- Open the Google Camera app and tap the downward-pointing arrow at the top of the screen.
- From the resulting popup, tap the gear icon.
- Tap Grid Type and then select a grid option (such as 4 x 4) from the resulting popup.
- Once selected, the grid will appear in the camera app frame

Have the student turn on the camera. The gridlines should be present, with four points of intersection, forming nine boxes. Ask the student to hold the camera so that the subject of the photo appears at one of those points of intersection.

Have the student photograph the subject at all four points of intersection. Then have the student take a photo with the subject in the center.

Review the results.

Ask: Which composition do you like best? Why?

Activity Two: The Line Hunt

The Leading Lines of Photography

Photographs often show different types of lines and shapes, such as lines on sidewalks and in buildings. Lines help to guide the viewer's eyes into the photo, and lead the eyes to the subject. Even a person's arm can be a "leading line."

Have the student go on a walk with a camera or smartphone, looking for leading lines. Have students take photos of the following:

- A hallway.
- Something with thin lines.
- Something with straight lines.
- A front entrance.
- Something with curvy lines.

Which photos show leading lines?

What do those lines lead your eyes to look at?

Which of the lines make you feel like you are moving?

Coaches Notes – Photography and Math

Photography Learning Term of the Week:
Grid: The built-in camera grid divides the frame into thirds both horizontally and vertically.

STEAM Visual Art Question of the Week: How does photography use math?

The main math concepts used are fractions and numbers. Math is used to calculate the amount of light let into the camera via shutter speed and aperture, and the sensitivity of the sensor or film to light.

STEAM Science Word of the Week:
Aperture: In optics, the aperture is the maximum diameter of a light beam that can pass through an optical system such as a camera lens.

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