

Mastering Manual Mode, Part One: Camera Operations

Camera Operations

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Grade Level	9th – 12th Grade	**Time Frame**	50 minutes
Subject	Visual Arts	**Duration**	1 class period
Course	Visual Arts		

Essential Question

How does a videographer use the camera settings to control the image they want to capture?

Summary

In this introductory lesson, students will learn the three fundamental elements of camera operation: aperture, shutter speed, and ISO, which are key to achieving proper exposure in photography. The lesson will explain how aperture controls the amount of light entering the lens and how it affects depth of field. Shutter speed will be covered to demonstrate its role in freezing or blurring motion by adjusting how long the sensor is exposed to light. ISO will be introduced as a tool for adjusting the camera's sensitivity to light, balancing low-light scenarios, and optimizing image quality. A digital lab component will allow students to practice these concepts using a camera simulation, where they can experiment with different settings and see instant feedback on exposure results. By the end of the lesson, students will be able to confidently manipulate these three settings to achieve well-exposed images in various lighting conditions.

Snapshot

Engage

Students investigate cameras using I Notice, I Wonder.

Explore

Students compare and contrast traditional cameras with virtual cameras in a Gallery Walk.

Explain

Students use a Card Sort to identify key vocabulary.

Extend

Students complete a Scavenger Hunt to find and use essential camera features.

Evaluate

Students reflect on their learning and complete a 3-2-1.

Standards

ISTE Standards for Students (For Students (2016))

ISTE1: Empowered Learner- Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences.
ISTE1a: Students articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes.
ISTE1b: Students build networks and customize their learning environments in ways that support the learning process.
ISTE1c: Students use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways.
ISTE1d: Students understand the fundamental concepts of technology operations, demonstrate the ability to choose, use and troubleshoot current technologies and are able to transfer their knowledge to explore emerging technologies.

Oklahoma Academic Standards (Fine Arts: Visual Art (High School: Proficient (I)))

VA.CP.1 : Learn and use vocabulary and concepts related to visual arts.
VA.P.2 : Use various media, supplies, and tools in an appropriate and safe manner in the creation of original visual artworks.

Attachments

- Camera Basics Vocabulary—Camera Operations - Spanish.docx
- Camera Basics Vocabulary—Camera Operations - Spanish.pdf
- Camera Basics Vocabulary—Camera Operations.docx
- Camera Basics Vocabulary—Camera Operations.pdf
- Card Sort—Camera Operations - Spanish.docx
- Card Sort—Camera Operations - Spanish.pdf
- Card Sort—Camera Operations.docx
- Card Sort—Camera Operations.pdf
- Gallery Walk Posters—Camera Operations - Spanish.docx
- Gallery Walk Posters—Camera Operations - Spanish.pdf
- Gallery Walk Posters—Camera Operations.docx
- Gallery Walk Posters—Camera Operations.pdf
- I Notice, I Wonder—Camera Operations - Spanish.docx
- I Notice, I Wonder—Camera Operations - Spanish.pdf
- I Notice, I Wonder—Camera Operations.docx
- I Notice, I Wonder—Camera Operations.pdf
- Lesson Slides—Camera Operations.pptx
- Scavenger Hunt—Camera Operations - Spanish.docx
- Scavenger Hunt—Camera Operations - Spanish.pdf
- Scavenger Hunt—Camera Operations.docx
- Scavenger Hunt—Camera Operations.pdf

Materials

- Cameras, or pictures of cameras
- Lenses, or pictures of lenses
- Virtual cameras
- Webcam
- Camcorder
- Sticky notes
- Chart paper
- Paper

- Markers
- Pens/pencils
- Internet access

10 minutes

Engage

Use the attached **Lesson Slides** to facilitate the following lesson. Begin the lesson by showing **slides 2–4**, which introduce the title of the lesson, the essential question, and the learning objectives. Emphasize that the essential question will be addressed throughout the lesson.

Next, display **slide 5** and distribute the **I Notice, I Wonder** handout. Have students watch the video Camera Operations Demystified while completing an I Notice, I Wonder activity. At the end of the video, have students share some of their observations with the class. Remind students that the video introduces the three pillars of exposure (shutter speed, aperture, and ISO) as well as the four main camera types that will be used in this lesson (DSLR, mirrorless, camcorder, and webcam).

10 minutes

Explore

Teacher's Note: Preparation

Print out the attached **Gallery Walk Posters** and consider laminating them for long-term use. Hang the four posters up in numbered stations around the room.

Display **slide 6**. Place students in small groups of 3–4 and have them conduct a Gallery Walk to interact with the four learning stations, each with a different camera body type. These stations should include Mirrorless, DSLR, Camcorder, and Webcam. Ask students to compare and contrast the types of cameras. Use the I Notice, I Wonder strategy as a way of generating student responses.

Teacher's Note

Ask students to write down their observations about each of the camera types on a large poster board or sticky notes.

Going Deeper

Some questions to ask students:

- "Which camera do you think provides the operator the most control?"
- "What setting do you think this camera is best used for?"

Virtual Option

This gallery walk can be placed on a Google Slides show or a Pear Deck. Students will be able to make observations from pictures and leave comments on the slide.

10 minutes

Explain

Teacher's Note: Preparation

Print and cut out one set of Card Sort cards for each pair of students. Alternatively, you can create a virtual Card Sort on Desmos.

Transition to **slide 7** and distribute the attached **Card Sort** handout and the **Camera Operations Vocabulary** handout to each student. The cards contains relevant words and definitions that students will need to complete the activity. Ask students to complete the Card Sort by matching words with definitions. Discuss answers as a class after students have had time to complete the Card Sort.

15 minutes

Extend

Transition to **slide 8** and distribute a copy of the **Scavenger Hunt** handout to each student. Engage students in a scavenger hunt using the Scavenger Hunt Notes instructional strategy. This scavenger hunt will include vocabulary, camera function icons, and camera body types. Place students into small groups again and have them take turns rotating workstations to gather information from each camera included. Invite students to find the corresponding buttons, abbreviations, and symbols found on each camera. Some workstations will require access to the digital menu.

Teacher's Note

Students will gain a basic understanding of what features and buttons can be found on each camera. Additionally, they will also reinforce the key vocabulary as students interact with each camera body type.

5 minutes

Evaluate

Display **slide 9**. Distribute paper and pens if needed, then ask students to complete a 3-2-1 reflection:

- What 3 things have you learned today?
- What are 2 questions you still have?
- What is 1 thing you found interesting?

Resources

- K20 Center. (n.d.). 3-2-1. Strategies. https://learn.k20center.ou.edu/strategy/117
- K20 Center. (n.d.). Card sort. Strategies. https://learn.k20center.ou.edu/strategy/147
- K20 Center. (n.d.). Desmos classroom. Tech Tools. https://learn.k20center.ou.edu/tech-tool/1081
- K20 Center. (n.d.). Gallery walk / carousel. Strategies. https://learn.k20center.ou.edu/strategy/118
- K20 Center. (n.d.). Google slides. Tech Tools. https://learn.k20center.ou.edu/tech-tool/2335
- K20 Center. (n.d.). I notice, I wonder. Strategies. https://learn.k20center.ou.edu/strategy/180
- K20 Center. (2025, March 14). *Mastering manual mode: Camera operations demystified* [Video]. YouTube. https://www.youtube.com/watch?v=ZNwGyE8FZVk
- K20 Center. (n.d.). Pear deck. Tech Tools. https://learn.k20center.ou.edu/tech-tool/653
- K20 Center. (n.d.). Scavenger hunt notes. https://learn.k20center.ou.edu/strategy/3113