Understanding digital photography and digital images

Activity Overview

Digital photography is fast, fun, and easy. One of the coolest things about digital photography is that you can see your picture right away. With just a few clicks of the mouse you can download, organize, edit, and share all of your digital photos. In this activity, students take photos and gather images from various sources, identifying elements of visual design that reflect good composition. Students also learn about scanned images, Camera RAW, video stills, and key digital image terminology.

Note: Portions of this activity align to the Adobe Certified Associate objectives. Within the instruction steps and technical guides, the specific learning objectives for the exam(s) are referenced with the following format: [1.1]

Activity Objectives

Design skills

• Understanding image composition

Research and communication skills

• Analyzing and critiquing photographs

Technical skills

General

• Using a digital camera
• Using scanners

Project Assets

• *Guide:* Introduction to digital photography [2.2, 2.5, 2.6]
• *Guide:* How to scan images [2.5]

Background preparation resources

Technical and content information

ISTE NETS*S Standards for Students

Adobe Certified Associate objectives

1. Explain how to use a digital camera. Distribute the *Introduction to digital photography* guide [2.1, 2.2, 2.5,] and review tips on good image composition and elements of visual design and explain their impact by showing image examples. Some tips include:

   - Framing: When framing the picture, try to fill the frame with relevant and interesting elements.
   - Emphasis: Include a focal point of the photograph, a subject that is emphasized.
   - Angle of view: Take pictures from the subject's eye level to capture it realistically, or change the angle to alter the point of view.
   - Balance: Create a sense of weight for the elements within the frame; some objects will have a large sense of weight and some will have a small sense of weight.
   - Rule of thirds: Offset your picture to help focus the viewer's eyes on the subject.
   - Close-ups: Take close-up pictures to capture details and highlight specific objects.
   - Tone and sharpness: Use light and shadow to focus attention on or draw attention away from your subject. Have your subject in focus and blur the extraneous elements to draw viewers to the subject.
   - Arrangement: Remove objects not essential to the composition, or eliminate them by changing the camera's perspective.
   - High dynamic range (HDR) imaging: Use exposure bracketing and take several pictures at different exposure settings. These images can be combined later to achieve the artistic HDR effect.

   Note: The Background preparation resources section includes additional information on using a digital camera.

2. Let students know they will be taking two types of photos: portraits and landscapes. Ask students to take pictures of each other, objects in the classroom, and landscapes outside the school.

3. Ask students to download their images and compare them to your examples. Use this comparison to continue the discussion of image composition.

   Note: You should prepare photo examples that will be similar to the ones the students will take.

4. Point out the differences between scanned images, digital camera images, video stills, and Camera RAW.[2.1]

5. Discuss the key terminology for digital images, including concepts like pixels, raster, bitmap, and vector images, and resolution.[2.1, 2.6]

6. Briefly explain how scanners work.[2.5] Distribute the *How to scan images* guide [2.5] and demonstrate how to open and save an image from a digital camera and an image from a scanner in Photoshop, using the photographs students shot and scanned. Discuss the advantages of manipulating a saved copy of an image and explain the various file formats used to save images.

   Note: It is recommended that students be introduced to basics of the Photoshop workspace prior to opening and saving images in Photoshop. Use the *Getting started with Photoshop* activity to introduce your students to Photoshop.

Assessment:

	0 – Does not meet expectations	3 – Meets expectations	5 – Exceeds expectations
Images	Absent or incomplete.	Creates original images that employ good image composition and elements of visual design.	Creates original images with a point of view, clearly employing good image composition and elements of visual design.

Background preparation resources:

- To view video tutorials aligned with the skills required to complete this project, visit Adobe TV: http://tv.adobe.com/
- For more teaching and learning resources on the topics in this project, search for resources from the community on the Adobe Education Exchange: http://edex.adobe.com/
- For an overview of the interface and for more information on the technical aspects of *Adobe Photoshop*, see *Photoshop* Help.

Photography

- Tips on digital photography composition: http://digital-photography-school.com/blog/digital-photography-composition-tips.
- A variety of information about digital cameras: www.malektips.com/digital_cameras_help_and_tips.html.
- Links to tips for taking great pictures: www.kodak.com/ek/US/en/Consumer_Products/Tips_Projects_Center/Tips_from_the_Pros.htm.
- Tips for image composition and definitions on the elements of visual design: http://photoinf.com/General/Robert_Berdan/Composition_and_the_Elements_of_Visual_Design.htm.

Scanning

- A comprehensive look at scanning and graphics: www.scantips.com
- Modify the *How to scan images* guide instructions to be specific to your scanner.

ISTE NETS*S Standards for Students

This project is aligned to the ISTE NETS*S Technology Standards. Depending on the subject and content area the student selects you may research your own state content standards to see how this project aligns to your state requirements.

ISTE NETS*S: Curriculum and Content Area Standards – NETS for Students

1. Creativity and Innovation

   Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students:

   a. apply existing knowledge to generate new ideas and products and processes.

   b. create original works as a means of personal and group expression.

6. Technology Operations and Concepts

   Students demonstrate a sound understanding of technology concepts, systems and operations. Students:

   a. understand and use technology systems.

   b. select and use applications effectively and productively.

Adobe Certified Associate Exam Objectives

Adobe Certified Associate, Visual Communication objectives

2.1 Demonstrate knowledge of image resolution, image size, and image file format for web, video, and print.

2.2 Demonstrate knowledge of design principles, elements, and image composition.

2.5 Demonstrate knowledge of image generating devices, their resulting image types, and how to access resulting images in Photoshop.

2.6 Identify key terminology of digital images.

For more information

Find more teaching materials for using Adobe software in your classroom on the Adobe Education Exchange: http://edex.adobe.com/.