Lesson Plan

Course Title: Principles of Information Technology

Session Title: Introduction to the Digital Camera

Lesson Duration: 60 Minutes

Performance Objective:
Upon completion of this assignment, the students will be able to choose the right digital camera for the type of pictures they are going to take and successfully transfer images from the camera to their computer for editing.

Specific Objectives:
Students will be able to
- recall terminology related to digital cameras
- know the different types of digital cameras and the benefits of each
- know the techniques involved in taking quality digital photos
- transfer digital photos from their camera to their computer
- know what basic editing should be done on a digital photo before using

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Preparation

TEKS Correlations: 130.272(c)(4)
This lesson, as published, correlates to the following TEKS. Any changes/alterations to the activities may result in the elimination of one or more of the TEKS listed.

(C) use available reference tools such as user manuals, both online and written as appropriate;

(D) demonstrate understanding of the process of connecting peripheral devices;

(E) demonstrate proficiency in the use of a variety of input devices such as a mouse, keyboard, microphone, digital camera, printer, scanner, and optical disk reader.

Instructor/Trainer

References:
www.gimp.org
www.foldoc.org – Online Dictionary of Computing
http://photo.net/equipment/digital/basics - Digital Cameras – A Beginners Guide

Instructional Aids:
- Digital Camera Word Search Puzzle
- Digital Camera Worksheet
- Digital Camera Activity
- Digital Camera Presentation

Materials Needed:
- Copies of the instructional aids and presentation on digital cameras

Equipment Needed:
- Digital camera (several if possible)

• Computer equipped with graphic editing software • Projector	
Learner	
Students will need a basic understanding of their photo editing software and should complete the Digital Camera Word Search prior to the presentation so they have exposure to the terminology and will recognize them during the presentation.	

Introduction

MI	**Introduction (LSI Quadrant I):**
	Students should have already been exposed to the digital camera terms on the Word Search. **ASK, "**How many of you have a digital camera?" **ASK**, "How many of you know what your camera's megapixel setting is?" (Most likely students will know this answer and assume that the high megapixel rating is always better.) **ASK**, "If you were having digital pictures made into prints, which camera do you think would produce higher quality results—a 4 megapixel or an 8 megapixel?" **SAY,** "Actually if everything was the same on the camera except the megapixels, they both would produce the same results. You would not get any better quality photo with the 8 megapixel on an 8 x 10 print. This lesson will teach you the basics of the digital camera, how it works, how to take good pictures, and common editing techniques." **Show** the Digital Camera Presentation

Outline

MI	**Outline (LSI Quadrant II):** Instructors can use the presentation, slides, and handouts	**Instructor Notes:**

	I. Distribute the Digital Camera Word Search to students. Students should have exposure and recognize the following terms:
	   A. pixels
	   B. megapixel
	   C. camera
	   D. digital
	   E. viewfinder
	   F. compact
	   G. dslr
	   H. zoom
	   I. focus
	   J. resizing
	   K. crop
		I. Students should complete the word search before the teacher presents the lesson.

	II. Give the students the Digital Camera Worksheet to complete during the presentation.	II. Students should complete the worksheet during the presentation.

	III. Show the presentation on digital cameras
	    A. Digital photos overview
	    B. Knowing your camera
	        i. What is a digital camera?
	        ii. Megapixels
	        iii. Lcd
	        iv. Viewfinder
	        v. Osd
	    C. Types of digital cameras
	        i. Ultra compact digital cameras
	        ii. Compact digital cameras
	        iii. Advanced digital cameras
	        iv. Digital single lens reflex cameras
	    D. Taking digital photos
	        i. Rule of thirds
	        ii. Focusing on the subject
	        iii. Zoom
	    E. Transferring photos
	    F. Editing concepts
	        i. Adjusting the color settings
	        ii. Cropping images
	        iii. Resizing images
		III. Go through the presentation with the students. The instructor should have an understanding of the material and be able to elaborate on each of the topics.

	IV. Demonstration
	
	    A. Show the students the digital camera and point out the different parts:
	        1. Power switch
	        2. Lenses
	        3. View finder
	        4. Electronic viewfinder
	        5. USB or memory stick
	        6. Battery
	        7. Setting adjustment
	        8. Shutter button
	
	    B. Demonstrate taking a picture of a student or of an object.
	
	    C. Show students how to transfer the photo to the computer.
		IV. The instructor should know how to use the digital camera, how to transfer photos from it, and how to use the image editing software available in the classroom.

	D. Show the students the image editing software they will use to edit their photo. E. Show students how to resize, crop, and adjust the brightness and contrast of the image.	

	V. Students should complete the Digital Photo Activity in groups of 2.
	
	    A. Students take quality digital photos
	        1. Rule of Thirds
	        2. Proper zoom & focusing
	
	    B. Students transfer images
	
	    C. Students edit images
	
	    D. Summative questions following activity
		V. Assign each student a partner and allow them to select a background with scenery. They may need to go outside to take their photo.
		
		Instructor should closely monitor this activity.

Application

MI	**Guided Practice (LSI Quadrant III):**
	The instructor should demonstrate using a digital camera and how to transfer a photo to the computer for editing.
MI	**Independent Practice (LSI Quadrant III):**
	Students will complete the Digital Camera Activity.

Summary

MI	**Review (LSI Quadrants I and IV):**
	ASK, "On the basis of what you have learned in this lesson, what are some things you should consider before purchasing a digital camera?" **ASK**, "If you were to send a friend a photo you took with your digital camera, how would you prepare the image for sending?" **ASK**, "How is the megapixel rating related to the quality of prints you can get from your digital camera?" The teacher should review the Summative Questions at the end of the Digital Camera Activity.

Evaluation

MI	**Informal Assessment (LSI Quadrant III):**

	1. During the presentation, the teacher should ask open-ended questions periodically to check for understanding.

2.The teacher should observe the students during the guided practice to evaluate their understanding how to take, transfer, and edit digital photos. |
MI	**Formal Assessment (LSI Quadrant III, IV):**
	The teacher should review the worksheet using the provided key and the final photos that the students took during their activity to determine if they successfully took a photo, transferred it to their computer, and edified it.
Extension	
MI	**Extension/Enrichment (LSI Quadrant IV):**
	Students should take their own digital photos and use them in their own presentations, web site design projects, or more advanced graphic editing projects.

Icon	MI	Teaching Strategies	Personal Development Strategies
	Verbal/ Linguistic	Lecture, discussion, journal writing, cooperative learning, word origins	Reading, highlighting, outlining, teaching others, reciting information
	Logical/ Mathematical	Problem solving, number games, critical thinking, classifying and organizing, Socratic questioning	Organizing material logically, explaining things sequentially, finding patterns, developing systems, outlining, charting, graphing, analyzing information
	Visual/Spatial	Mind-mapping, reflective time, graphic organizers, color-coding systems, drawings, designs, video, DVD, charts, maps	Developing graphic organizers, mind-mapping, charting, graphing, organizing with color, mental imagery (drawing in the mind's eye)
	Musical/ Rhythmic	Use music, compose songs or raps, use musical language or metaphors	Creating rhythms out of words, creating rhythms with instruments, playing an instrument, putting words to existing songs
	Bodily/ Kinesthetic	Use manipulatives, hand signals, pantomime, real life situations, puzzles and board games, activities, role-playing, action problems	Moving while learning, pacing while reciting, acting out scripts of material, designing games, moving fingers under words while reading
	Intrapersonal	Reflective teaching, interviews, reflective listening, KWL charts	Reflecting on personal meaning of information, studying in quiet settings, imagining experiments, visualizing information, journaling
	Interpersonal	Cooperative learning, role-playing, group brainstorming, cross-cultural interactions	Studying in a group, discussing information, using flash cards with other, teaching others
	Naturalist	Natural objects as manipulatives and as background for learning	Connecting with nature, forming study groups with like-minded people
	Existentialist	Socratic questions, real life situations, global problems/questions	Considering personal relationship to larger context

Name _____ Date _____

Introduction to the Digital Camera – Word Search

Locate each of the words in the word search below. You should become familiar with each of the terms. The words can go forward, backward, up, down, or diagonal.
During the digital cameras lesson, pay attention to learn the meaning of each of these words and the way they relate to the types and uses of digital cameras.

```
A  Z  V  N  M  Y  Z  T  N  D  X  W  R  M  O
Q  L  W  I  M  S  L  K  J  Z  J  C  E  P  M
U  D  C  K  E  A  A  J  F  B  E  G  S  S  Y
Z  A  W  R  T  W  S  U  F  C  A  P  I  T  O
U  V  C  I  S  S  F  C  O  P  T  N  Z  K  Y
S  B  G  A  U  E  Y  I  I  C  N  J  I  H  L
N  I  F  C  R  W  A  X  N  V  P  Y  N  I  P
D  Y  O  U  K  E  E  K  Q  D  Z  M  G  J  L
W  F  Y  B  Z  L  M  D  F  D  E  N  P  O  C
Y  T  S  O  N  U  R  A  G  E  H  R  M  Y  C
F  V  O  P  S  L  G  U  C  E  Q  B  K  A  R
P  M  Z  Z  S  T  C  A  P  M  O  C  T  L  O
Y  F  X  D  F  C  T  Z  X  W  P  L  Q  Z  P
E  K  O  H  L  Y  P  Q  B  T  U  Q  J  X  X
F  T  T  Q  P  I  X  E  L  S  Z  F  M  P  B
```

- pixels
- megapixel
- camera
- digital
- viewfinder
- compact
- dslr
- zoom
- focus
- resizing
- crop

Name _____KEY_____ Date _____

Introduction to the Digital Camera – Word Search KEY

Locate each of the words in the word search below. You should become familiar with each of the terms. The words can go forward, backward, up, down, or diagonal.
During the digital cameras lesson, pay attention to learn the meaning of each of these words and the way they relate to the types and use of digital cameras.

```
A  Z  V  N  M  Y  Z  T  N  D  X  W  R  M  O
Q  L  W  I  M  S  L  K  J  Z  J  C  E  P  M
U  D  C  K  E  A  A  J  F  B  E  G  S  S  Y
Z  A  W  R  T  W  S  U  F  C  A  P  I  T  O
U  V  C  I  S  S  F  C  O  P  T  N  Z  K  Y
S  B  G  A  U  E  Y  I  I  C  N  J  I  H  L
N  I  F  C  R  W  A  X  N  V  P  Y  N  I  P
D  Y  O  U  K  E  E  K  Q  D  Z  M  G  J  L
W  F  Y  B  Z  L  M  D  F  D  E  N  P  O  C
Y  T  S  O  N  U  R  A  G  E  H  R  M  Y  C
F  V  O  P  S  L  G  U  C  E  Q  B  K  A  R
P  M  Z  Z  S  T  C  A  P  M  O  C  T  L  O
Y  F  X  D  F  C  T  Z  X  W  P  L  Q  Z  P
E  K  O  H  L  Y  P  Q  B  T  U  Q  J  X  X
F  T  T  Q  P  I  X  E  L  S  Z  F  M  P  B
```

- pixels
- megapixel
- camera
- digital
- viewfinder
- compact
- dslr
- zoom
- focus
- resizing
- crop

Introduction to the Digital Camera – Worksheet

1. Digital photos are made up of small picture elements called _____ .

2. _____ is a measure of how a printer prints an image.

3. _____ is a measure of how a monitor displays an image.

4. The resolution of an image is measured by the image's
   _____ .

5. How is a camera's megapixel rating calculated?

6. What is the function of the **LCD** on a digital camera?

7. What is the primary drawback to using a camera with an optical view finder as illustrated by the image below?

8. What is the benefit of using a camera with an electronic viewfinder?

9. Information about the digital camera's settings displayed on the LDC is called
   _____ .

10. What are the 4 primary types of digital cameras on the market?
   a. _____

   b. _____

   c. _____

   d. _____

11. Which type of camera is primarily used by professionals an on the upper end of the price scale?

12. Which type of digital camera is inexpensive and usually small enough to be carried in a shirt pocket?

13. What are the 4 points that impact the quality of a digital photo?

   a. _____

   b. _____

   c. _____

   d. _____

14. The **Rule of Thirds** suggests what?

15. What are the three different types of focus that your digital camera might be equipped with?

     a. _____

     b. _____

     c. _____

16. Most digital cameras are equipped with either optical or digital zoom, or both. Specify the method each zoom uses to magnify the image.

     a. Optical Zoom –

     b. Digital Zoom –

17. Digital images may be transferred to your computer by using a _____a_____ or a _____b_____ .

     a. _____

     b. _____

18. Depending on the quality of your camera and the lighting environment in which a photo was taken, you may need to do what with your image to improve it?

19. Why would you want to resize a photo taken from your digital camera before emailing it to a friend?

20. The process of trimming, or cutting away, unwanted areas on an image is called _____ .

Name _____KEY_____ Date _____

Introduction to the Digital Camera – Worksheet KEY

1. Digital photos are made up of small picture elements called _____ .
    pixels

2. _____ is a measure of how a printer prints an image.
    dpi – dots per inch

3. _____ is a measure of how a monitor displays an image.
    ppi – points per inch

4. The resolution of an image is measured by the image's
    _____ .
    pixel dimensions

5. How is a camera's megapixel rating calculated?
    by multiplying the width and height pixel count of the images produced by the camera.

6. What is the function of the **LCD** on a digital camera?
    to display the image seen through the camera's lens

7. What is the primary drawback to using a camera with an optical view finder as illustrated by the image below?
    parallax, the viewfinder shows a slight different image than what is seen through the lens.

8. What is the benefit of using a camera with an electronic viewfinder?

    the electronic viewfinder displays exactly what is seen through the camera's lens.

9. Information about the digital camera's settings displayed on the LDC is called _____ .

    OSD – On Screen Display

10. What are the 4 primary types of digital cameras on the market?

    Ultra compact

    Compact digital camera

    Advanced digital camera

    Dslr camera

11. Which type of camera is primarily used by professionals an on the upper end of the price scale?

    DSLR camera

12. Which type of digital camera is inexpensive and usually small enough to be carried in a shirt pocket?

    Ultra compact digital camera

13. What are the 4 points that impact the quality of a digital photo?

    The quality of the camera

    The pixel size of the image

    The format in which the image is stored

    The proficiency of the photographer

14. The **Rule of Thirds** suggest what?

    An image can be divided into 9 equal parts. The four intercepting points can be used to align the focal point of an image, rather than simply centering the subject to create a more interesting image.

15. What are the three different types of focus that your digital camera might be equipped with?

    Fixed focus
    Auto focus
    Manual focus

16. Most digital cameras are equipped with either optical or digital zoom, or both. Specify the method each zoom uses to magnify the image.

Optical Zoom – Uses the camera's optics to magnify the image. Produces higher quality image.

Digital Zoom – Digital zoom crops your image and magnifies the result of the cropping.

17. Digital images may be transferred to your computer by using a _____ or a _____ .
    a. USB cord
    b. Memory stick

18. Depending on the quality of your camera and the lighting environment in which a photo was taken, you may need to do what with your image to improve it?
    Adjust the color, brightness, and contrast levels.

19. *Why would you want to resize a photo taken from your digital camera before emailing it to a friend?*
    Digital cameras usually produce very large images, and some people may have difficulty downloading large attachments.

20. The process of trimming, or cutting away, unwanted areas on an image is called _____ .
    Cropping

Introduction to the Digital Camera – Activity

You will need access to a digital camera and a computer with image editing software for this activity. Your instructor should have assigned you to a partner and specified where you should save your digital photos to on your computer.

1. Using a digital camera, take a digital photo of your partner. Your photo should include not only your partner, but also a background.

   a. Consider the rule of thirds. Your partner should be positioned along the left or right vertical line with scenery in the background.
   b. You should properly focus on the subject: your partner.

   You may want to take 3 or 4 different photos with multiple background scenes. After you take the photo of your partner, they should take a photo of you.

2. Once you have taken your digital photos, transfer the photos to your computer. Your instructor should have specified where to save the photo. You should select one of the images your partner took of you for editing.

3. You will next use your image editing program to modify the image and prepare it to be sent in an email or uploaded to a web page.

   a. Open the image editing program that is available to you on your computer.
   b. If your image editor has an auto fix for color quality, go ahead and apply it.
   c. Using the resize feature, resize the image so it has a width of 500px. Do not adjust the height; allow the height to adjust automatically so the image remains in proportion.
   d. Resave the image as your last name.

SUMMATIVE QUESTIONS:

1. What is the original pixel dimension of the image taken with your camera?

2. Based on the pixel dimensions of your camera, what is the exact megapixel rating of the digital camera you used for this activity?

3. Why would the image need to be resized before uploading it to a website?

4. If you were going purchase a digital camera just for taking photos for the web, which type do you think would be sufficient, and why?