

Optics Lesson

Issue Teach a lesson on optics to 7th and 8th grade students.

Solution Use digital cameras to allow the students to explore the principles of lens focal length and how it affects light.
Students had a brief lesson in the principles of light and lenses and were then broken into groups using:

Trainer Tip: How to Keep Peace When Separating Friends
Their assignment was to take pictures using multiple variables and then record the variables with the results. The variables were:

- People vs. still life
- Digital SLR vs. “point and shoot” with built-in telephoto-ish feature
- Pentax vs. Nikon

Results The students were encouraged to go beyond the basics of the assignment and try using the manual settings to further explore light through the F-stop (diaphragm) and shutter speed settings. Naturally, the students enjoyed taking pictures of each other and learned a lot in the process. One student, who I later had in Special Education, really got a lot out of the exercise, which was unusual for her. It was nice to see her get involved and potentially gain a new hobby.
The following pages show the worksheets used for the lesson.

Classifications The table below lists three classifications for this work sample.

Learning Styles	Intelligences ¹	Example of ²
Visual	Visual-Spatial	Creativity
Kinesthetic	Bodily-Kinesthetic	Learning Style diversity
Verbal	Linguistic-Verbal	Use of resources
Social	Interpersonal	
Solitary	Intrapersonal	
Logical	Logical-Mathematical	
	Naturalistic	

¹ Intelligences refers to Gardner’s Multiple Intelligences.

² Reason(s) it was provided as a work sample

Morning Work March 28, 2017

Match the body parts to the camera parts. Put the letter of the camera part from the list below next to its corresponding body part.

- | | | |
|--|-------|---------------------|
| A. Lens | _____ | Cornea |
| B. Film developer/transfer to computer | _____ | Optic nerve & brain |
| C. Shutter | _____ | Eyelid |
| D. Diaphragm | _____ | Pupil |
| E. Printed photo or on screen | _____ | Image is seen |
| F. Shutter release | _____ | Blink |
| G. Film/ SD card | _____ | Retina |

Photo Tracking Sheet

Name: _____

Subject of photo	Camera brand	Camera Type	Lens size	SD Card #	Observations
A.	<input type="checkbox"/> Nikon <input type="checkbox"/> Pentax	<input type="checkbox"/> SLR <input type="checkbox"/> PAS	<input type="checkbox"/> Standard <input type="checkbox"/> Telephoto		
B.	<input type="checkbox"/> Nikon <input type="checkbox"/> Pentax	<input type="checkbox"/> SLR <input type="checkbox"/> PAS	<input type="checkbox"/> Standard <input type="checkbox"/> Telephoto		
C.	<input type="checkbox"/> Nikon <input type="checkbox"/> Pentax	<input type="checkbox"/> SLR <input type="checkbox"/> PAS	<input type="checkbox"/> Standard <input type="checkbox"/> Telephoto		
D.	<input type="checkbox"/> Nikon <input type="checkbox"/> Pentax	<input type="checkbox"/> SLR <input type="checkbox"/> PAS	<input type="checkbox"/> Standard <input type="checkbox"/> Telephoto		
E.	<input type="checkbox"/> Nikon <input type="checkbox"/> Pentax	<input type="checkbox"/> SLR <input type="checkbox"/> PAS	<input type="checkbox"/> Standard <input type="checkbox"/> Telephoto		

Subject of photo	Take photos of the still life setups as well as the classmates in your group.
Camera brand	
Camera Type	SLR = Single Lens Reflex, PAS = Point and shoot
Lens size	Use both standard and telephoto lenses. Make sure to see (AND RECORD) what the differences are when you compare the pictures.
SD Card #	There should be an identifying number on the SD card
Observations	Become a photo detective. What differences can you spot? Which camera was easiest to use?

Who was in your group? _____