Discovery Lab Description:
This lab is a great introduction to some fundamental concepts of optics. Students will investigate through the use of shadow puppets, what happens when you put different materials in front of a beam of light. They will learn through hands on exploration the concept of transparency and opaque. Students will leave with a puppet which will be great for future writing and storytelling.

During the Discovery Lab students will be expected to:
- Sit 4 students per table.
- Work cooperatively with one another at the table.
- Follow the hands-on procedures just as the Lab teacher or assistant explains them.
- Handle materials and equipment carefully.
- Wear safety glasses at all times when tools are in use.

It is important that teachers and chaperones:
- Help focus the students’ attention.
- Assist students with lab activities through questioning allowing the student to do the actual data collection and decision making. For example a parent might ask, “You seem frustrated that your face drawing on your puppet isn’t showing up when you put it in front of the light, how else could you change your puppet to get the case to show in the shadow?”
- Engage students at a higher level by asking open-ended questions throughout the class. For example: “Why did you choose _____________?”
- Turn off cell phones and other electronic devices during the activity.

Literary connection:
To get students excited about the upcoming Discovery lesson we suggest reading the following story with your students: Gregory’s Shadow by Don Freeman. Gregory Groundhog and his shadow desperately look for each other after they become separated from one another just before their annual appearance on Groundhog Day.

Nevada Academic Content Standards in Science (NGSS):
1-PS4-3. Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light.

Common Core:
W.K.2. Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.