In Focus Lesson Plan

Amount of time Demo takes: 5 mins.
Don’t this at home!

Materials
- ¾” candles (at least 10, each one may last only an hour)
- Lighter (multiple advised)
- A Study of Lenses kit

Set-up Instructions
1. Set up the apparatus as shown in Figure 1 below:

   ![Figure 1](image)

2. Replace the candle as needed throughout the day.

SAFETY!
- Fire is hot. Use appropriate care and be prepared.

Lesson’s Big Idea
- Experience the difference between converging (“light-focusing”) and diverging (“light-spreading”) lenses.
- Students can get a better understanding of how corrective lenses (glasses) work.

Instructional Procedure
1. Start with the convergent lens in focus. Explain this is how the eye works (our brain flips the image right side up after the lens has inverted it).
2. Take the lens out of focus by moving it closer to the candle and notice the difference in the image. This is how a near-sighted person sees - light
comes to a focal point before it reaches the back of the eye.

3. We can correct the near-sightedness by placing a divergent lens in between the images and the convergent lens. Place the double convex lens in between and move until the flame is in focus.

**Assessment/Sample questions you can ask**

1. How do glasses work?
2. Why does our brain have to flip images for us?

**Conclusion**

- When an eye is out of focus, we can use another lens (aka glasses) to correct it and make us able to see things.

**Clean Up**

- Blow out the candle and make sure no wax is on any equipment.
- Take apart the apparatus and put the entire *A Study of Lenses* kit away carefully so that the lenses are not broken.
- Clean up between demos if needed. When completely finished gather all materials listed for this demo and make sure everything is accounted for. If something was used up, broken, or damaged, let someone know so it can get replaced or fixed.

**References**


**Next Generation Science Standards**

- K-5
  - 3-LS3-1
  - 4-PS4-2
- 6-8
  - MS-PS4-2
- 9-12
  - HS-LS1-1/2