

# Creating Inquiry Activities: Design and Preparation



**Seth Hornstein**  
Graduate Student  
University of California, Los Angeles



# Main Concept Goal: Spectroscopy

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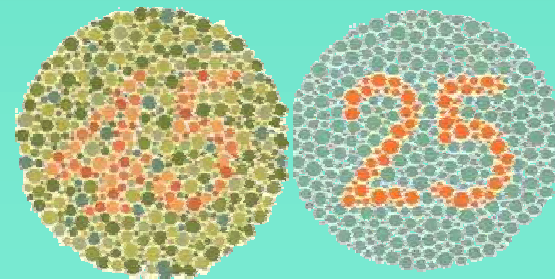
- **Content Goals:**
  - **Station #1 – Color Filters**
    - Different color filters transmit different information.
  - **Station #2 – Emission and Absorption Lines**
    - Different elements produce different sets of lines.
    - Lines seen in emission are the same as lines seen in absorption.
    - Hot gas emits; cool gas absorbs.
  - **Station #3 – Blackbodies and Temperature**
    - Hot solids emit in a continuous manner
    - Color & brightness depend on the temperature.
- **Hurdles**
  - **Limited Space**
    - 1 Lab Room
    - 15 Students
  - **Limited Time**
    - Originally started with 2 hours reserved for this activity
    - Ended up reworking schedule to allow for 3\_ hours.

# Why Reinvent the Wheel? Build from Previous Experience.

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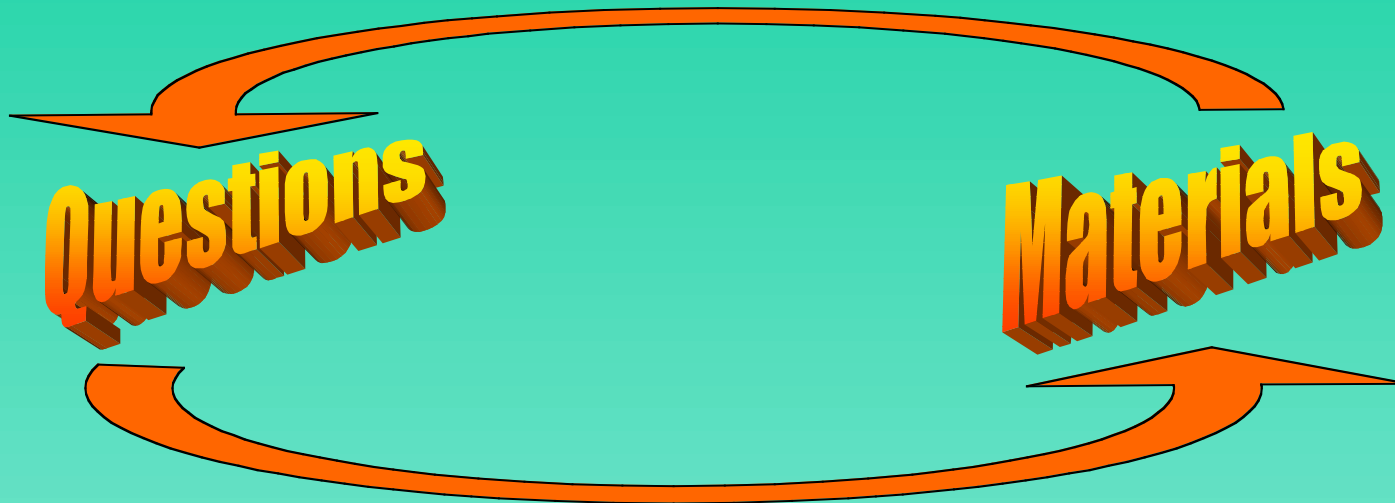


- **Red-Blue Box**
  - Educational tool used to demonstrate color temperature.
- **Spectrographs**
  - Instruments purchased/used for undergraduate Intro to Astronomy course
- **Ishihara Tests**
  - Tool used to detect color blindness



# Materials for Original Questions Led to More Questions!

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- Sources
  - Physics labs
    - UCLA
    - UCSC
    - UCB
  - Astronomy Teaching Resources
  - Office Depot
  - Orchard Supply Hardware

# Overall the Inquiry was Successful

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- More questions came up than we had originally planned.
  - **Basic** questions
  - **Difficult** questions
    - Everyone was able to explore their own questions.
- In a post orientation survey of 14 participants
  - 10 (71.4%) listed the activity as “Excellent” in **usefulness**
  - 8 (57.1%) listed the activity as “Excellent” in **quality**
    - Refine introduction?
    - Thinking tool?
    - Investigation and presentations were a bit hurried.
- Facilitation was a lot more difficult than we expected.
  - How do you help them out without giving them the answer or pushing them in a specific direction???

# Modifications for the Future

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- **More time!**
  - More time for question forming during starter activity.
  - Investigation phase could benefit from additional time.
- **In synthesis, introduce spectroscopy and tie all three stations together.**
- **Rethink station #2: Emission & Absorption Lines**
  - This station didn't develop the same type of questions as the other two stations. Possibly due to the more advanced topic leading to more advanced questions (most of which were QWWNDWATTs)