Designing a Telescope: A Problem-Based Learning Project

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GK-12 Fellowship

- Worked closely with teacher Jessica Jackson. Teamed up with teacher Tim Brewer and GK-12 Fellow Josh Wickman.

- 11th Grade Integrated Science
Project Concept

- Students work in small groups to 'design' a telescope and then role play convincing a board of experts to choose their design
  - Reinforces content knowledge
  - Develops basic internet research skills
  - Develops presentation skills
- End-of-semester culminating project
Outline of the Project

- Choose a part of the EM spectrum
- Decide what they want to study in that part of the spectrum
- Look at existing telescopes in that part of the spectrum to decide on basic elements of telescope and a location for their telescope
- Present their design to a panel of experts
Research Process

- Students had one week in the computer lab (90 min. period, 5 days)
- We provided a basic review of the EM spectrum and a few links to get started
- We also provided a worksheet-format packet to guide their research with specific questions to consider
Rehearsal

- Students did a rehearsal for Mr. Wickman, Mr. Brewer, Mrs. Jackson, or me during the last two days of research
  - Review content
  - Polish presentation skills
  - Peer comments and suggestions
Presentations

- Each group gave ~5 minute presentation
- Panel of outside 'experts' came to see presentations
  - Were given a rubric we developed to evaluate students' presentations
Reflections

- Students generally put a lot of effort into their presentations
  - Varying quality
- Might consider restructuring in the future
  - Include more formative assessment, better self-evaluation
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