

Designing a Telescope: A Problem-Based Learning Project

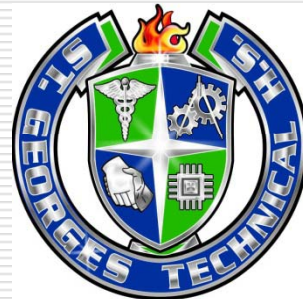
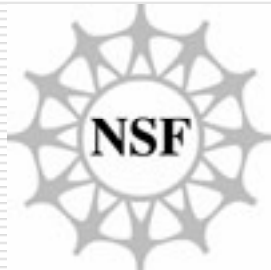
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GK-12 Fellowship

- ❑ 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
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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
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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
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Rehearsal

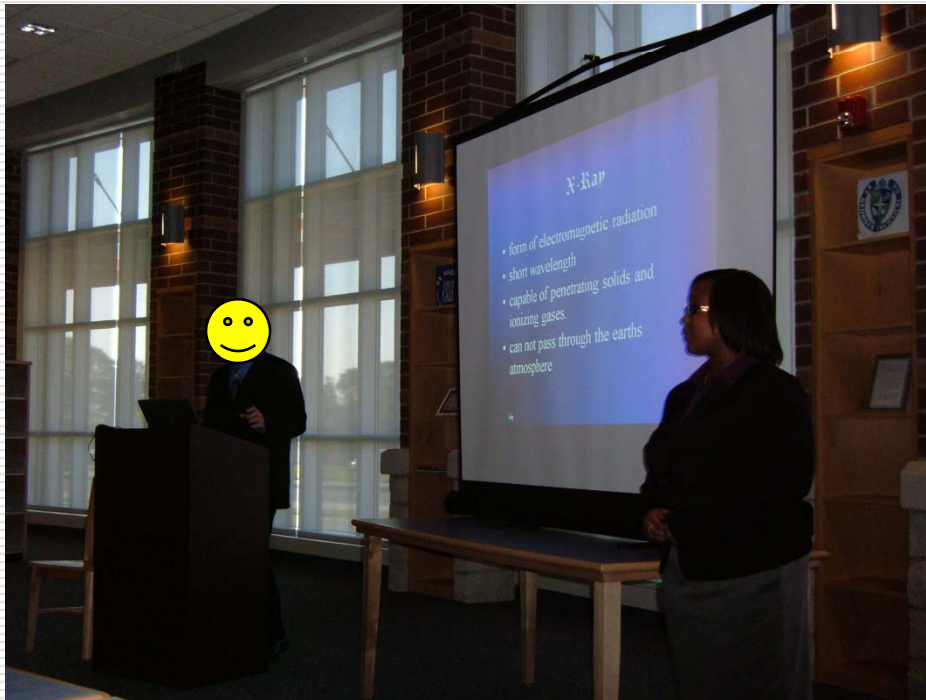
- Students did a rehearsal for Mr. Wickman, Mr. Brewer, Mrs. Jackson, or me during the last two days of research
 - Review content
 - Polish presentation skills
 - Peer comments and suggestions
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Presentations

- 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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Acknowledgments

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 - My advisor, Jamie Holder
 - NSF
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