Graduate Student-Teacher Pairing

Mr. Christopher Russell  
Dept. of Physics & Astronomy  
Theoretical Modeling of Massive Stars

Mrs. Lisa Nowak  
Delcastle High School  
Integrated Science Teacher
Role

• Assist with Science education in any way possible
  • Design new activities/Transform old activities
  • Teach subject matter in my specialty
  • Facilitate group work
  • Answer the “I don’t know, let’s ask Mr. Russell.” questions

• Increase student appreciation of science
  • How has science made our lives better?
  • Why is science funding important?
Scale of the Universe

- Misconception of Space Travel
- Landed on Moon with Apollo in 60’s/70’s
- Pres. Bush: go back to Moon and eventually to Mars
- What’s the big deal?
- Why not go to other stars & galaxies?
Scale of the Universe

- Misconception of Space Travel

Courtesy 20th Century Fox
Sun & Planet Sizes

- Turn ceiling into Sun
- Scale planets onto Sun
  - Reinforce math & life skills of scale factors
- See “life size” depiction of size differences
Sun & Planet Sizes

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5 ft. radius
Sun & Planet Sizes

- Turn ceiling into Sun
- Scale planets onto Sun
  - Reinforce math & life skills of scale factors
- See “life size” depiction of size differences

0.5 ft. radius
Sun & Planet Distance

- Turn ceiling into solar system
  - 56 ft. from Sun to Neptune

- Scale planets from Sun

- How close is nearest star?
  - 90 miles away
Wrap-up: Sizes & Distances

- How large would the planets be on the distance scale of the entire room?
- How far away would the planets be for the three size scales on the ceiling?
- More realistic understanding of space travel
  - Going to Mars is not simple, but not impossible
  - Never going to be able to visit far reaches of the galaxy
Final Thoughts: GK-12

- Immense respect for teachers
- New respect for educational researchers
- Hard to create interest in a subject, but relevance to their life is crucial for their engagement
Final Thoughts: My Career

- Much more willing to do outreach programs
- Much more able to explain why science is important
- Better ability to explain science and my research to non-scientists