

GK-12 Teaching Experience

Christopher Russell



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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

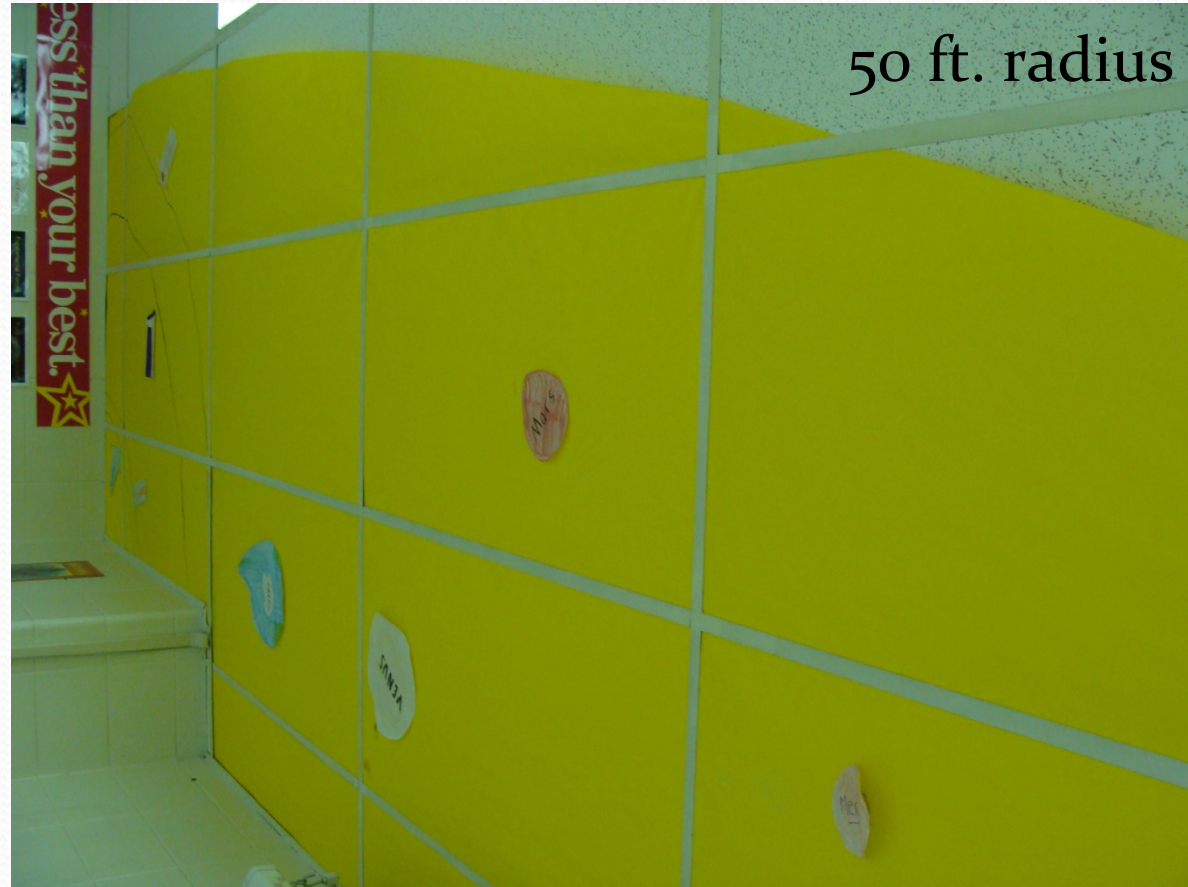
- Misconception of Space Travel



Courtesy 20th Century Fox

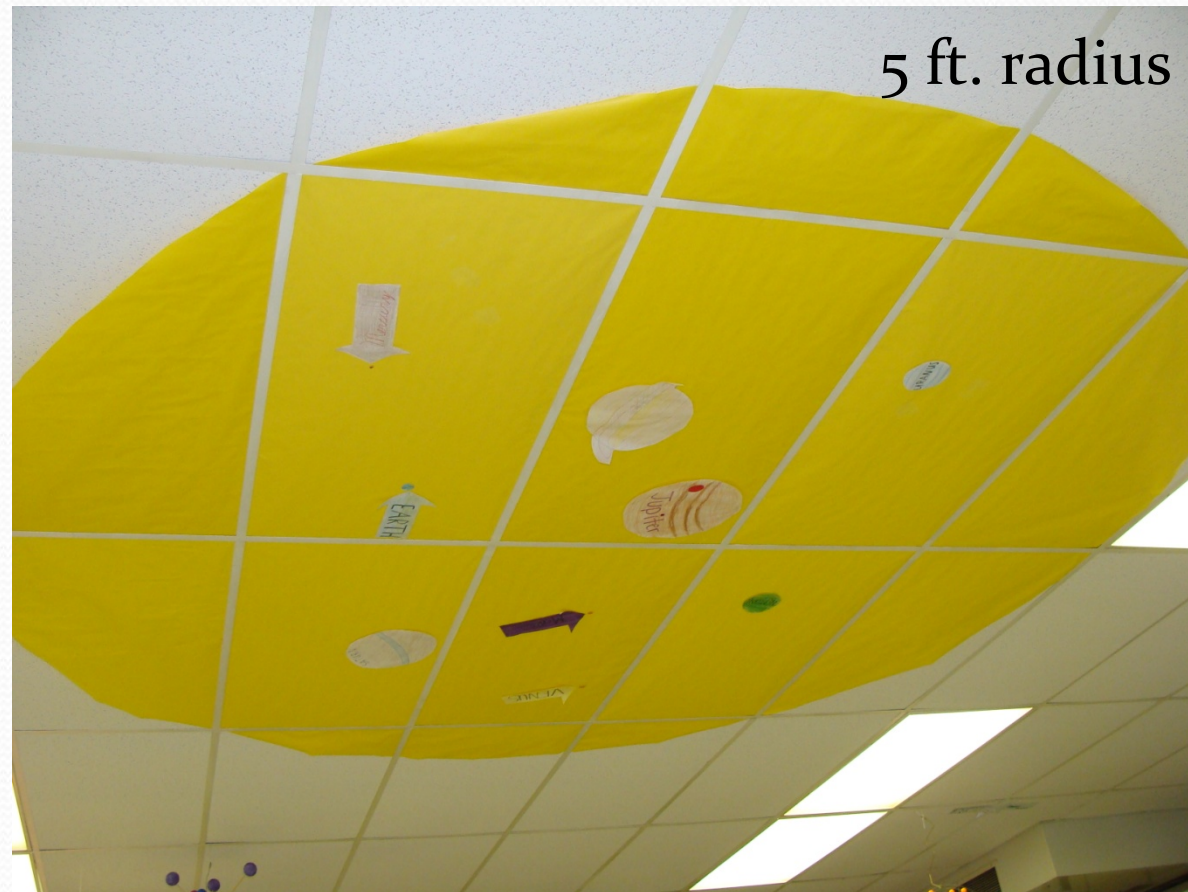
Sun & Planet Sizes

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



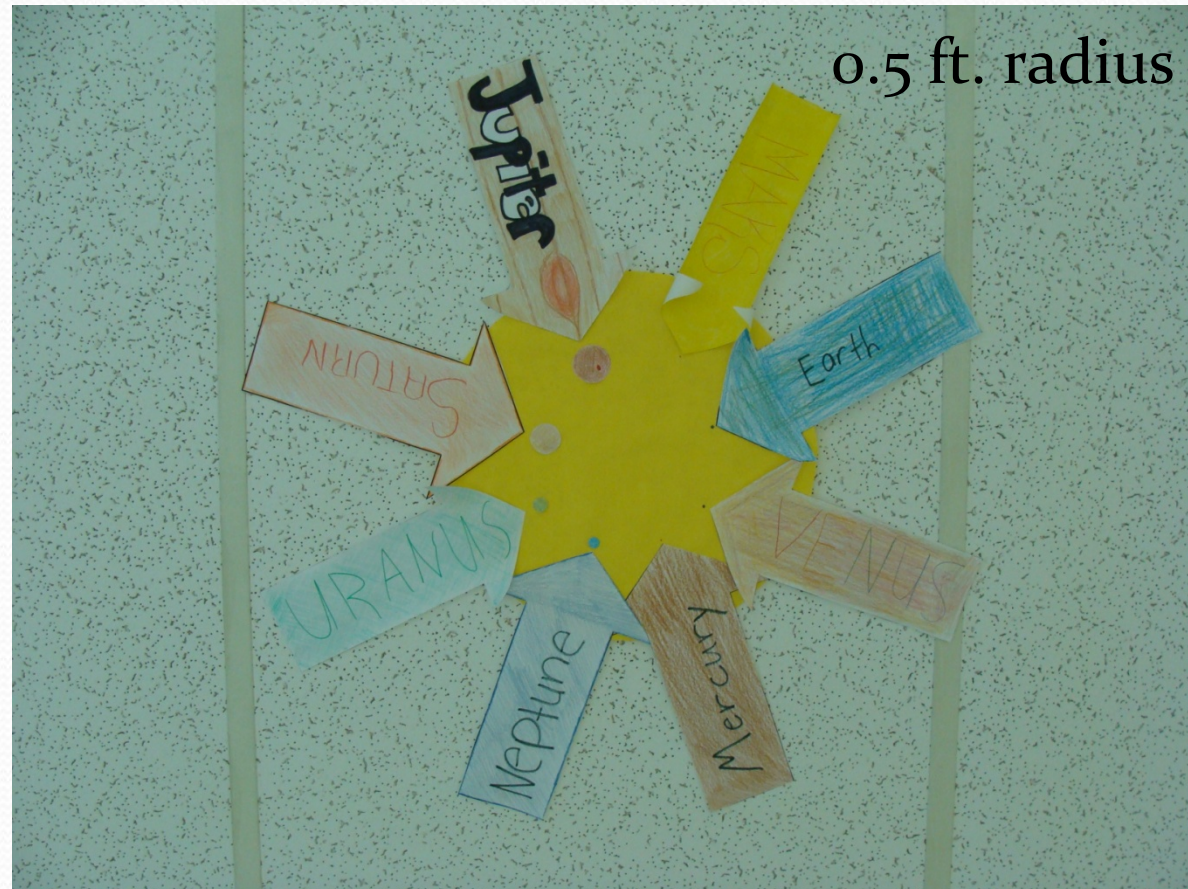
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Sun & Planet Distance

- 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