

# UNIVERSE IN THE CLASSROOM: ROBOTIC TELESCOPES IN PRIMARY SCHOOLS

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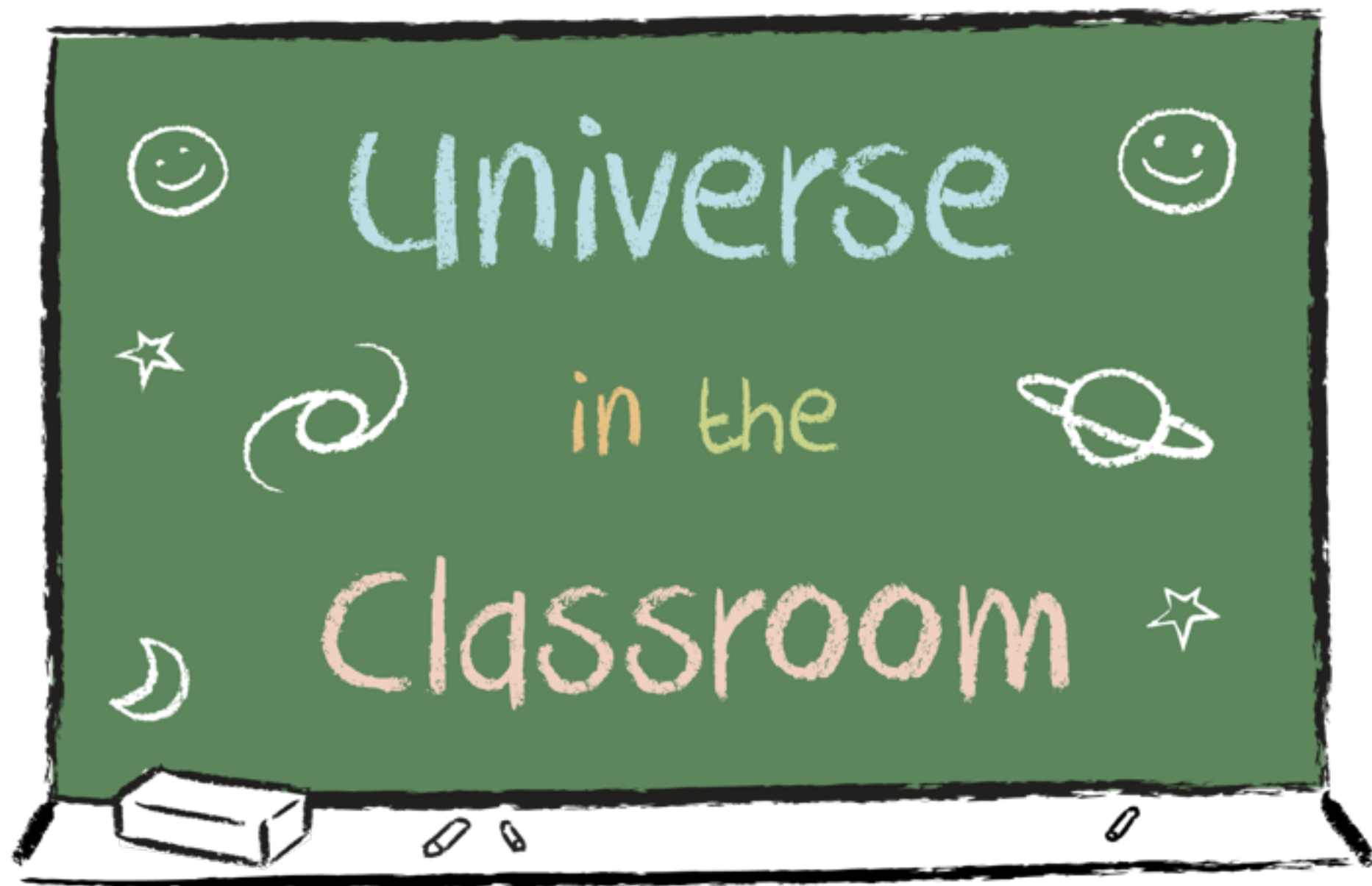
Sarah Eve Roberts



# WALES

- Population: 3 million
- Primary Education: ages 5-11 yr
- Maths, Reading and Science  
PISA ranking fallen since 2009
- Lowest of all UK countries across  
all three domains
- Only UK country lower than OECD  
average





# UNIVERSE IN THE CLASSROOM GOALS

- ★ Use astronomy to spark a **curiosity** and a **passion** for learning,
- ★ Raise primary school teacher **participation** in STEM activities,
- ★ Enrich, **modernise** and improve **teaching tools** and methods,
- ★ Provide **challenging** learning opportunities,
- ★ Promote a **diverse** range of scientists (gender, race, language etc.)
- ★ Raise social mobility, **engagement** and STEM skills in unengaged schools,
- ★ Change students **perceptions** of STEM,
- ★ Improve the quality of teaching in **underserved** schools and areas,



# UNIVERSE IN THE CLASSROOM GOALS

underserved

perceptions

role models

curiosity diverse

teacher engagement

modernise tools

# IMPACT FIGURES



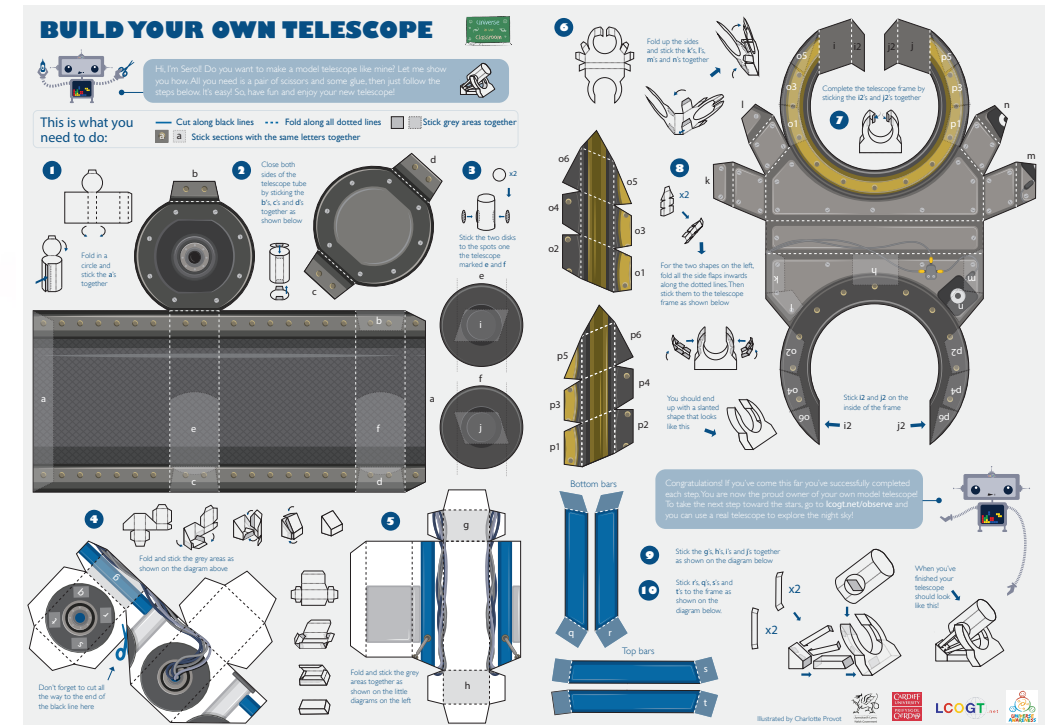
- Number of schools engaged: **215**
- Number of teachers trained: **339**
- Number of school workshops: **101**
- Number of STARS trained: **62**
- Number of schoolchildren reached directly: **22,083**







# HANDS-ON MATERIALS





Las Cumbres Observatory









# CHALLENGES

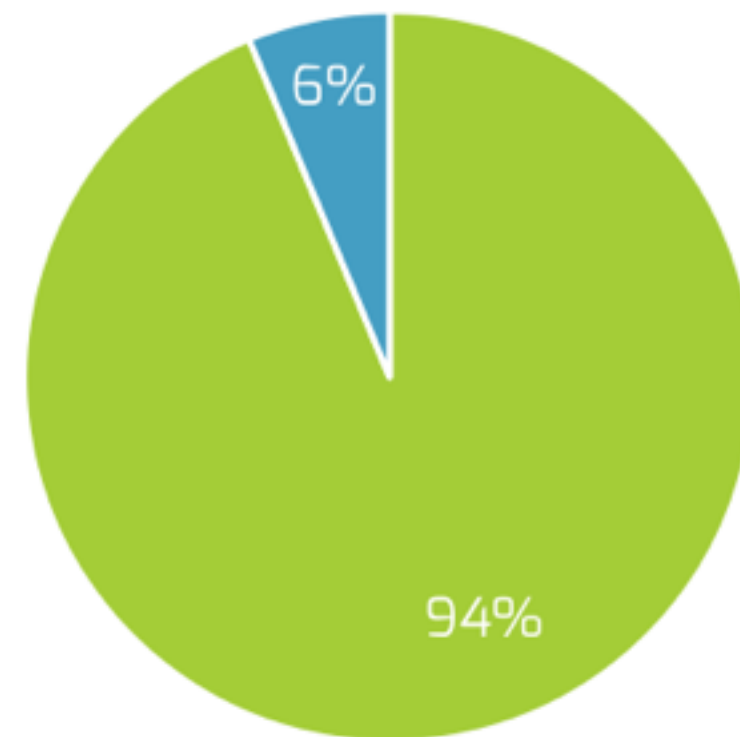
## ★ Risks of live observing session



Telescope Time Used: Queue vs Slot



SEROL



- Live observing
- Queue-based observing



# MESSIER BINGO



Charles Messier

## M93

**Type:**  
Open cluster

**Telescope:**  
Faulkes Telescope South

**Image by:**  
Northfleet School for Girls

[» Original](#)

Take your own picture! →



Powered by LCOGT

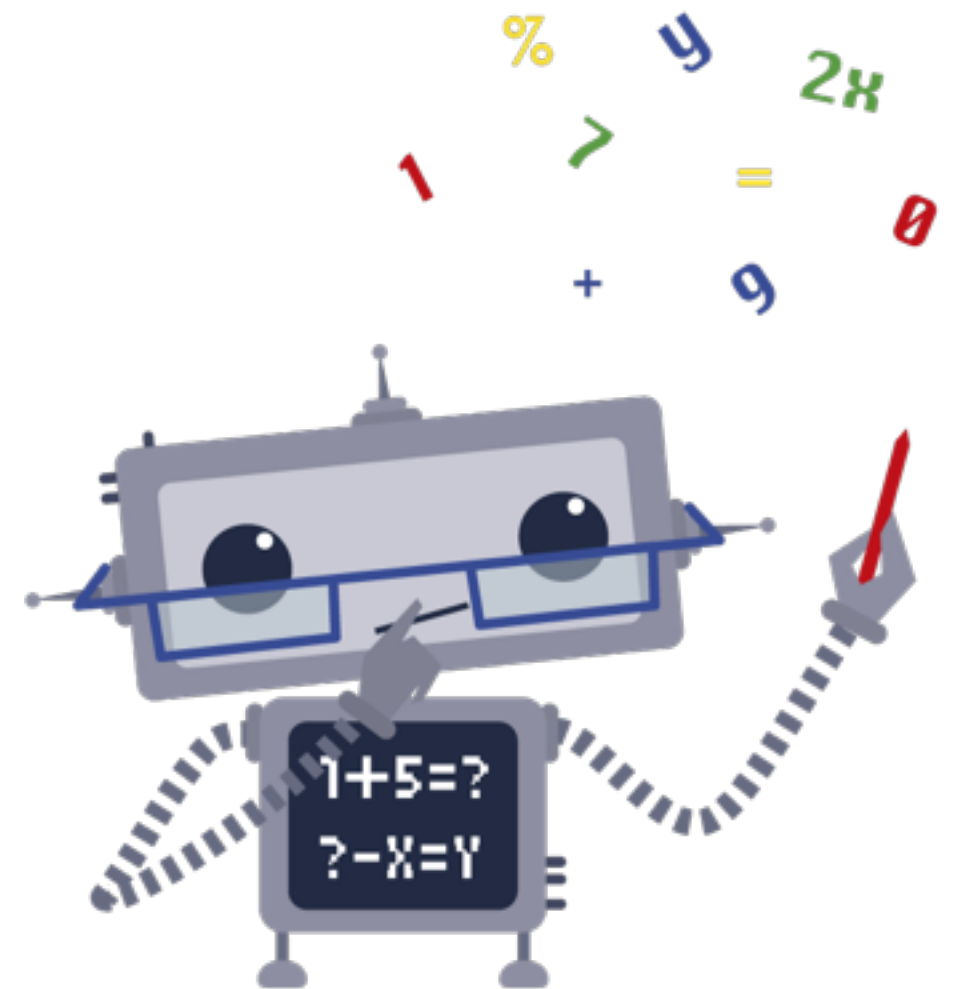


# CHALLENGES

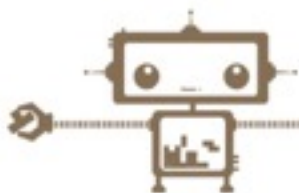


★ Risks of **live** observing session

★ Little knowledge of cosmic objects,  
no coverage in **National Curriculum**







## ACTIVITY

30  
MIN



### 11. Discover Time Zones

#### Description:

Different parts of the planet experience different times, when it's lunchtime in Wales, children in Australia are already fast asleep! Time zones are an important, but confusing concept. This activity uses hands-on demonstrations to explain the motion of the Earth and the need for different time zones in a clear and understandable way.

#### Materials:

- ★ Earth Ball
- ★ x7 Small stickers
- ★ Lamp
- ★ Printed Time Zones Worksheet per student ([Appendix 12](#))

#### Learning Objectives:

- ★ Students will understand the concept of time zones and become familiar with the following key terms: Prime Meridian, Longitude, Time Zone.
- ★ Students will learn how to calculate the time at different longitudes in relation to the Prime Meridian.
- ★ Students will appreciate the need for telescopes at different longitudes.

#### Background Information:

Towns and cities around the world used to set their clocks by the Sun, but dawn and dusk occur at different times in different places because of the Earth's rotation. The long travel times and lack of long-distance communications back then meant that the time differences were barely noticeable. The need for standard time zones didn't emerge until the 1800s, with the spread of high speed transportation systems.

[WWW.UNIVERSE.WALES](http://WWW.UNIVERSE.WALES)

Duration:

30  
MIN

15min - 1 hour

Subjects:



Science



Numeracy



Literacy



Art



Geography



History



ICT

Type of Activity:



Demo



Worksheet

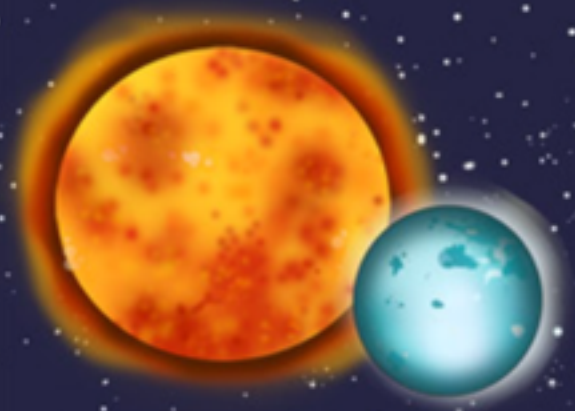


Hands-on



Game





# SEROL

Join Serol and become  
a Cosmic Explorer

CONTINUE YOUR ADVENTURE!

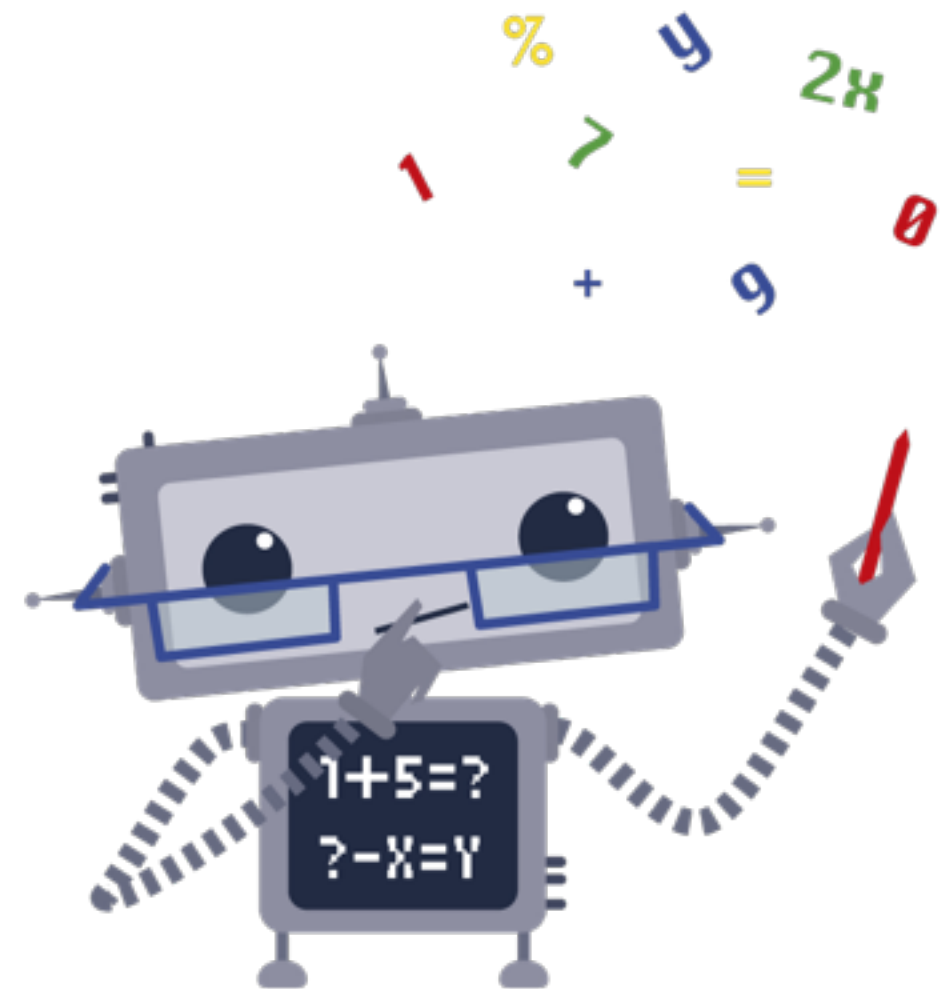


**[HTTPS://SEROL.LCO.GLOBAL/](https://serol.lco.global/)**

# CHALLENGES



- ★ Risks of live observing session
- ★ Little knowledge of cosmic objects, no coverage in National Curriculum
- ★ Many teachers intimidated and lacking knowledge and confidence







# TEACHER TRAINING

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- ★ 95% teachers more confident after training
- ★ 25% teachers have used LCO account “several times”
- ★ 45% teachers shared resources with other staff at school
- ★ 75% teachers said their school could use a second LCO account





# EVALUATION



2d

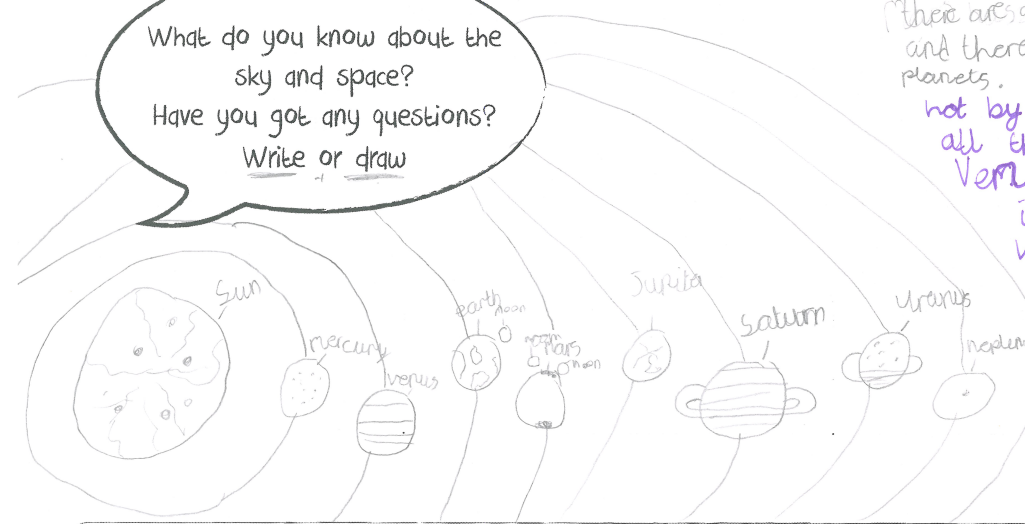


Name: Leon class 7

PMM  
Personal meaning map  
template to photocopy



What do you know about the  
sky and space?  
Have you got any questions?  
Write or draw



There are 9 planets including Pluto  
and there are 4 other dwarf  
planets. I & earth gets too  
hot by all the heat and  
all the water will evaporate.  
Venus has the most  
active volcanoes.  
Venus used to have  
lots of lakes and  
the amount of water  
on Venus is over 1000.

Date ..... Location .....  
Activity being evaluated .....  
Child age ..... M / F Languages: .....  
School .....

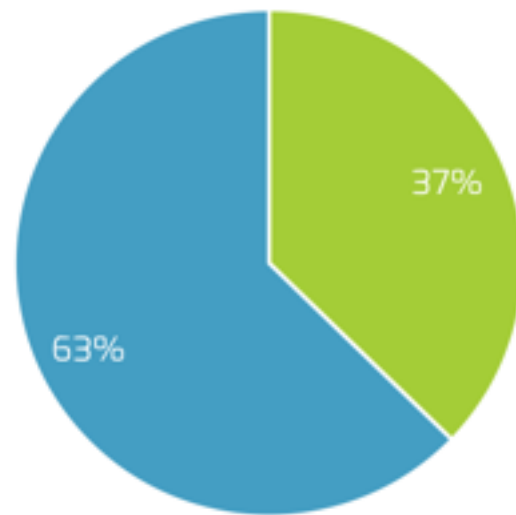
Instructions:

Children add ideas as writing or drawing, pre activity,  
using a pencil. After their activity, return and add new  
ideas using a PEN or BLUE coloured pencil

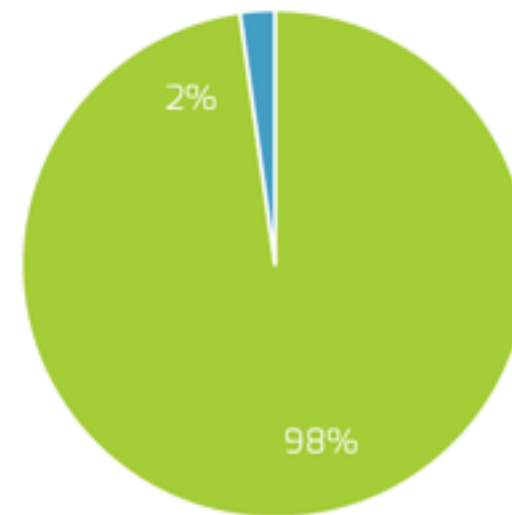
# EVALUATION



Gender of Scientist Drawn by Girls



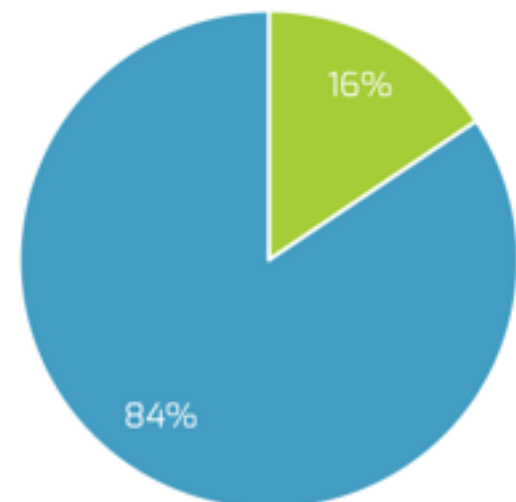
Gender of Scientist Drawn by Boys



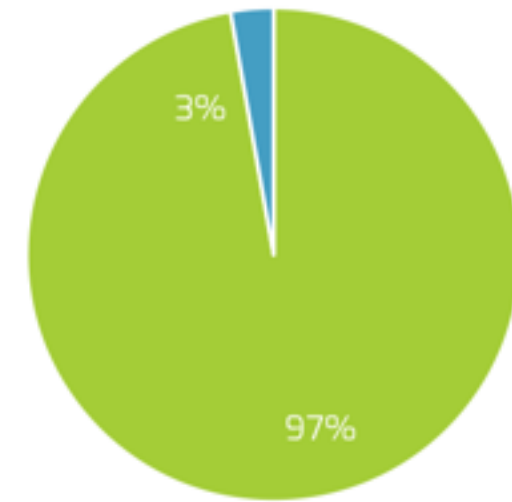
 Female

 Male

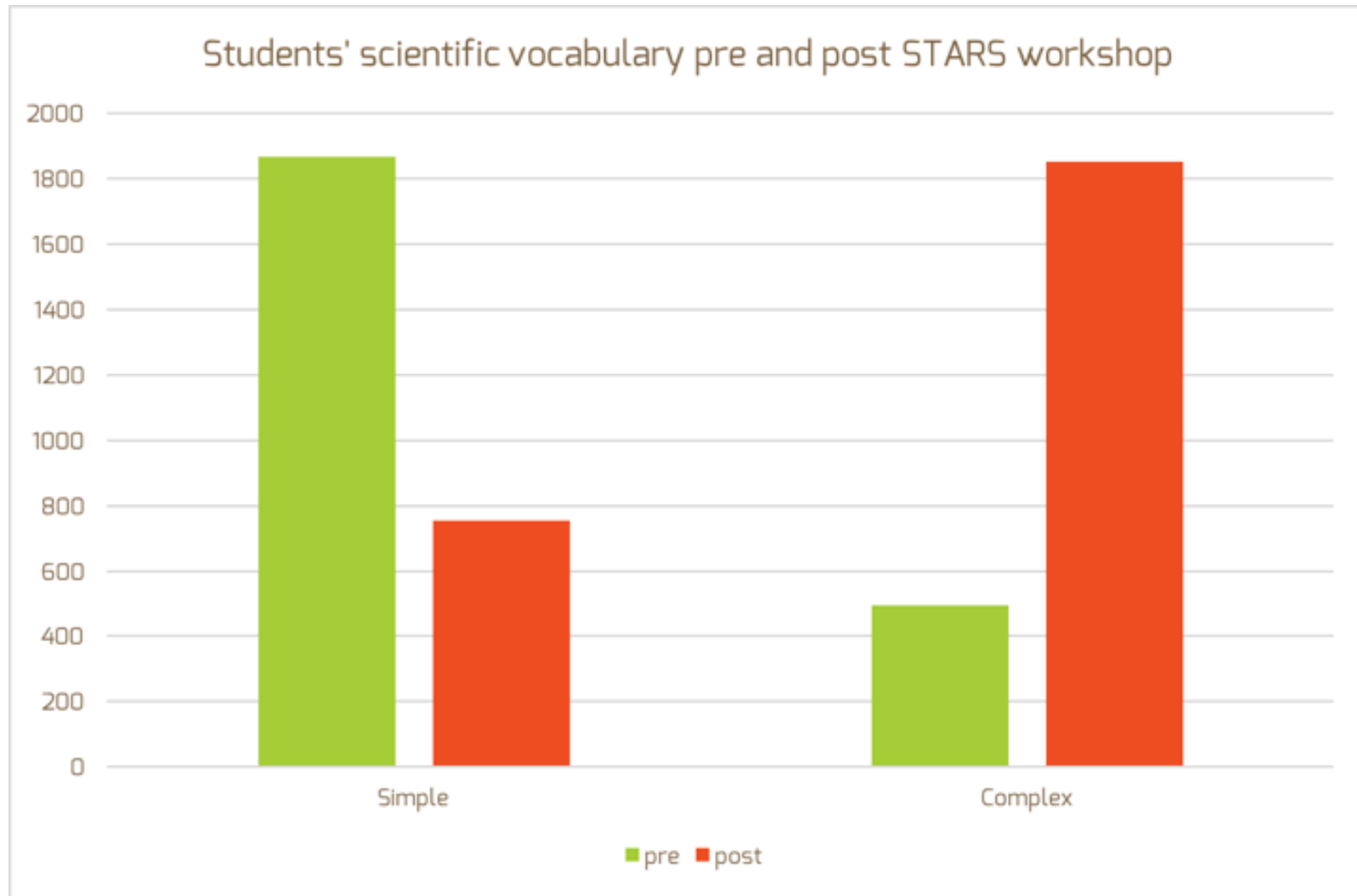
Gender of Scientist Drawn by Girls  
- Post STARS Workshop



Gender of Scientist Drawn by Boys  
- Post STARS Workshop



# WORKSHOP RESULTS

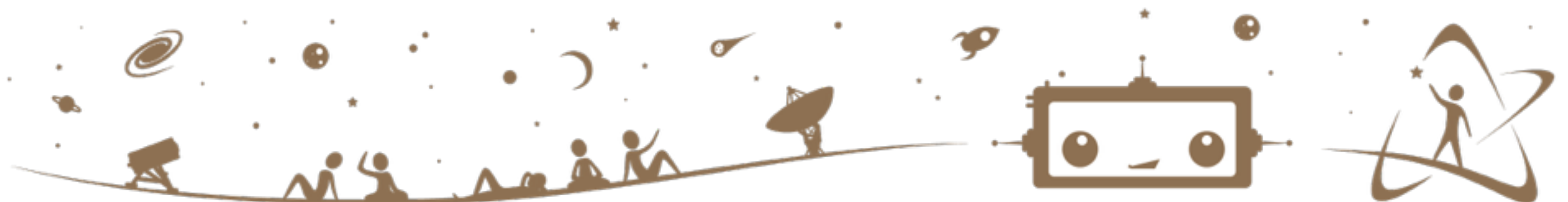
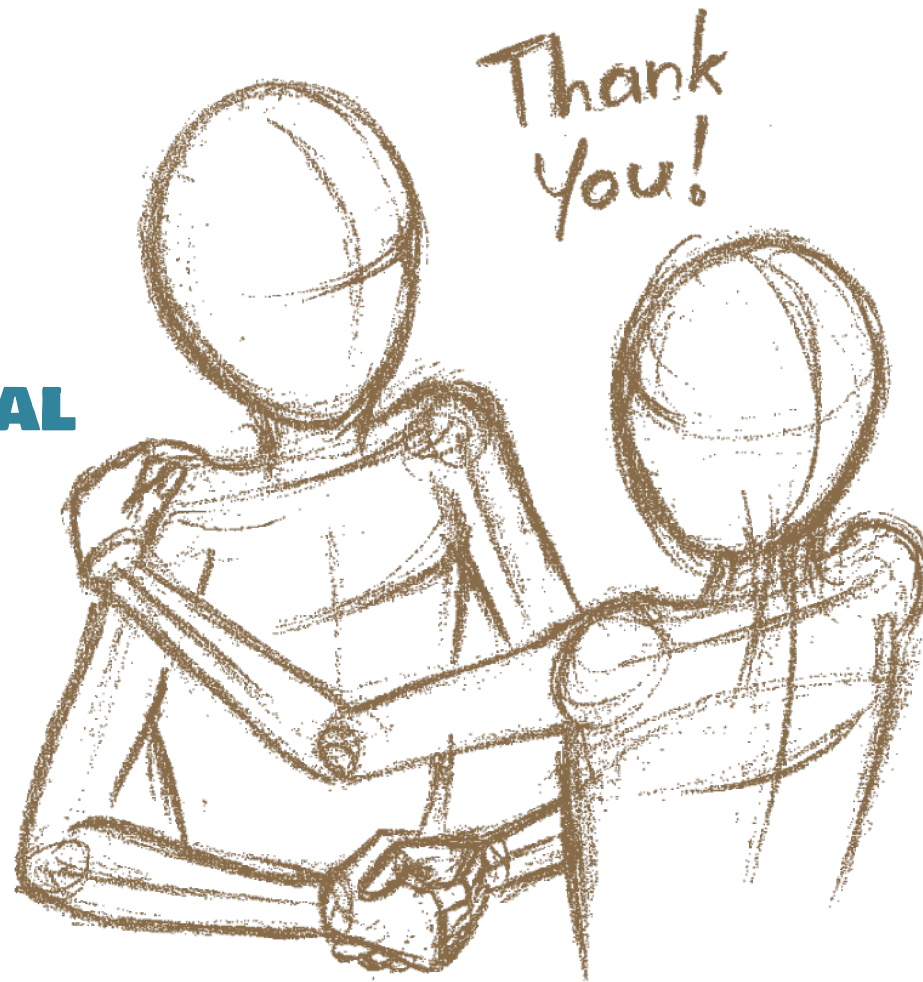


# THANKS FOR LISTENING!

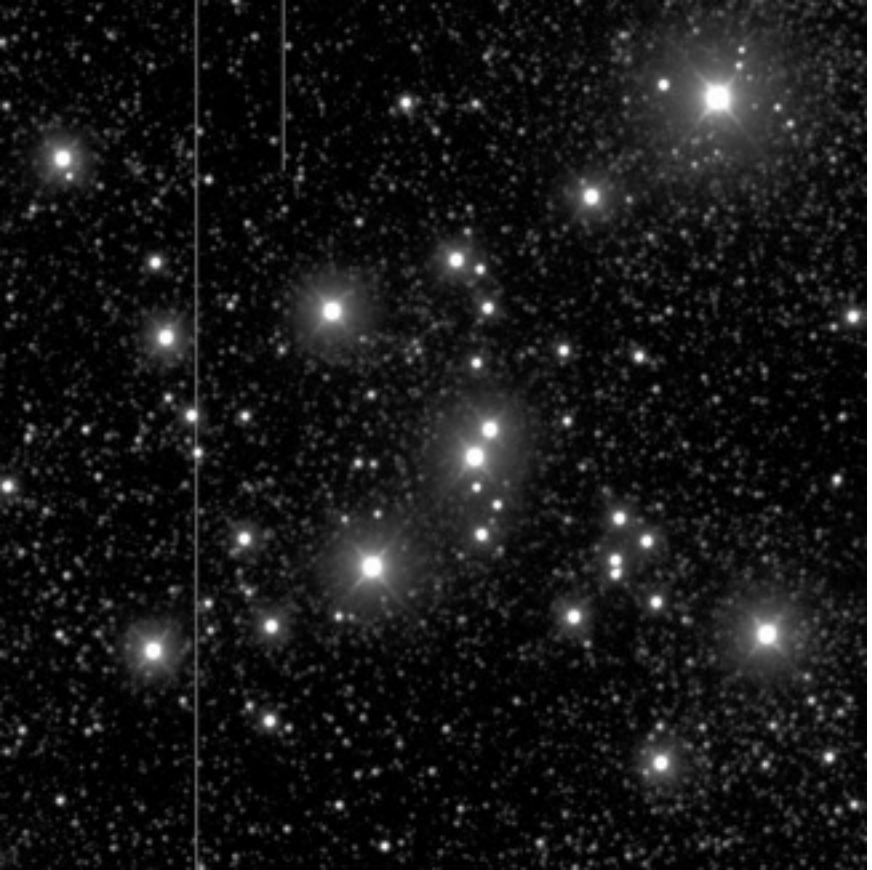
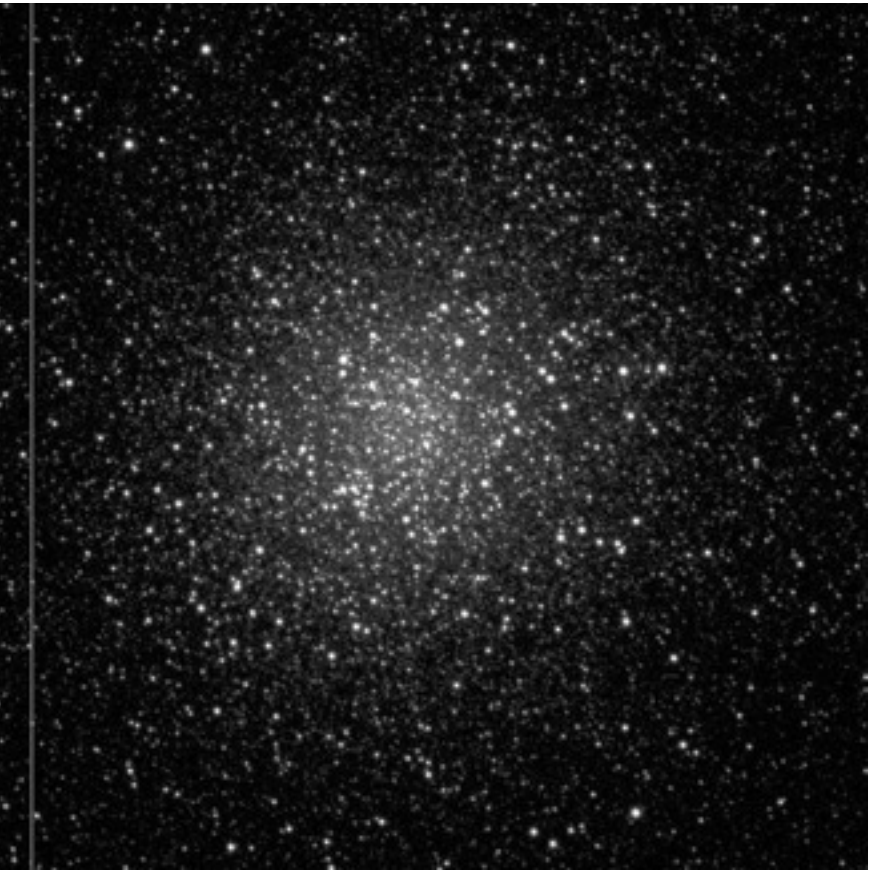


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**LCO EDUCATION  
PARTNERS**









# USEFUL LINKS

## Observing Portal

- [observe.lco.global](https://observe.lco.global)

## User Guides

- [lco.global/education/observing/](https://lco.global/education/observing/)
- [lco.global/onsky/cheatsheet/](https://lco.global/onsky/cheatsheet/)
- [universe.wales/robotic-telescopes-for-wales](https://universe.wales/robotic-telescopes-for-wales)

## Classroom Resources

- [messierbingo.lco.global](https://messierbingo.lco.global)
- [universe.wales/resources](https://universe.wales/resources)



check all links!!

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