

**DEVELOPING 14-18 YEAR OLDS' INTEREST AND PARTICIPATION IN PHYSICS BY TRAINING THEM TO DELIVER OUTREACH TO PRIMARY SCHOOL CHILDREN**



# STRUCTURE

- BACKGROUND
- HOW THE OUTREACH MODEL WAS DEVELOPED
- SAFETY AND TRAINING
- BENEFITS TO STUDENTS AND THE COMMUNITY



# SCIENCE OUTREACH - BACKGROUND

- MOST PUBLIC (PRIVATE!) SCHOOLS ARE SET UP AS CHARITIES AND ARE SUBJECT TO A “LEGAL REQUIREMENT THAT *[THEY]* MUST BE ABLE TO DEMONSTRATE THAT ITS AIMS ARE FOR THE PUBLIC BENEFIT IF IT IS TO BE RECOGNISED AND REGISTERED AS A CHARITY IN ENGLAND AND WALES.”

UK CHARITY COMMISSION, 2024



# SCIENCE OUTREACH – LIMITATIONS TO OVERCOME

- OBSTACLES TO DELIVERING SCIENCE-BASED EVENTS IN SCHOOLS:
  - STAFF AVAILABILITY
  - SPACE
  - DISRUPTION TO LESSONS



# SCIENCE OUTREACH – FINDING A VIABLE SOLUTION

- WHEN OLDER STUDENTS WORK WITH YOUNGER CHILDREN:
  - RELATE WELL TO WORKING WITH PEOPLE CLOSER TO THEIR AGE
  - INTERACT MORE FREELY
  - BENEFIT FROM EXPLANATIONS PUT INTO WORDS THEY USE



# SCIENCE OUTREACH – DEVELOPING THE SOLUTION

- IT TAKES A FEW YEARS TO BUILD THE CULTURE OF TRUST AND OPENNESS NEEDED
- WHEN YOU GIVE YOUNG PEOPLE THE OPPORTUNITY TO TAKE ON RESPONSIBILITY, THEY STEP UP TO THE CHALLENGE



# SCIENCE OUTREACH – COMMUNITY & INCLUSION



# SCIENCE OUTREACH – GROWTH

- WORD OF MOUTH BUILT EXCITEMENT ABOUT THE EXPERIENCES ON OFFER
- STUDENTS MOVED INTO TRAINING ROLES
- AS THE PROGRAMME EXPANDED, STUDENTS TOOK ON PLANNING, DEVELOPMENT, LOGISTICAL AND MARKETING ROLES
- DEFINED STUDENT LEADERS ACTED AS A COMMUNICATION CHANNEL





# SCIENCE OUTREACH – TRANSFERABLE SKILLS



# SCIENCE OUTREACH – SAFETY

- DIRECTED WORK FOR EACH “FIRST ENCOUNTER”
- HANDS ON PRACTICE
- ASSESSMENT AND (POSITIVE) FEEDBACK
- STEER PEOPLE TOWARDS THEIR LEVEL
- DEVELOPMENT THROUGH MENTORING



# SCIENCE OUTREACH – PRESENTER TRAINING

- LADDERED APPROACH – ASSIGNMENTS GREW IN COMPLEXITY AND RESPONSIBILITY
- RESOURCES, RESOURCES, RESOURCES!
- REVIEW PERFORMANCE AND CAPABILITIES
- FEEDBACK MUST ALWAYS BE CONSTRUCTIVE
- ROLE PLAY FOR ONE-TO-ONE INTERACTIONS
- DEVELOPMENT THROUGH MENTORING



# SCIENCE OUTREACH – RESOURCES, RESOURCES, RESOURCES!

SharePoint

Search this site

Physics in the Freezer

Home

Conversations

Documents

Pages

Site contents

Recycle bin

Edit

+ New Promote Page details Immersive reader Analytics

Published 2/21/2024

## Show Materials

Running Order & WDW

PIF Script 2023

Outreach Chic

## A Introduction

This is the first segment of the talk - it set out the background, but the introduction sets the seen rather than having lots of demonstrations.

Try to build excitement with the tone of voice and do lots of Q&A to engage the audience. Depending on their age you may wish to shorten some parts of the introduction - perhaps incorporating into relevant demos. If you do this, be careful not to run short...

## B Cooling Things Down

This part of the talk is aimed at getting your audience to understand that cold things can boil.

The kettle proves you have boiling happening, and the solid aerosol (which I usually refer to as smoke) formed by water vapour freezing shows that the temperature is low.

## Method Statements & Videos

Plymouth LN2 Talk 01 Intro

## Method Statements & Videos

2 Whistling Kettle

3 Smokey Bubbles

Plymouth LN2 Talk 02 The Kettle

Plymouth LN2 Talk 03 Smokey Bubbles

# SCIENCE OUTREACH – PRESENTER TRAINING

- LADDERED APPROACH – ASSIGNMENTS GREW IN COMPLEXITY AND RESPONSIBILITY
- RESOURCES, RESOURCES, RESOURCES!
- REVIEW PERFORMANCE AND CAPABILITIES
- FEEDBACK MUST ALWAYS BE CONSTRUCTIVE
- ROLE PLAY FOR ONE-TO-ONE INTERACTIONS
- DEVELOPMENT THROUGH MENTORING



# SCIENCE OUTREACH – BENEFITS

- PRESENTING SKILLS
- PRACTICAL SKILLS
- OTHER TRANSFERRABLE SKILLS
- CONFIDENCE
- REMAINING ENGAGED WITH SCIENCE



# SCIENCE OUTREACH – KEEPING INTEREST IN SCIENCE ALIVE



# SUMMARY

- YOU MUST INVEST TIME IN TRAINING
- INSTILL A SENSE OF A SHARED GOAL
- DON'T UNDERESTIMATE STUDENTS' ABILITIES
- ENSURE YOUR STUDENTS EXPERIENCE TANGIBLE BENEFITS





# REFERENCES

SLIDE 3: THE ADVANCEMENT OF EDUCATION FOR THE PUBLIC BENEFIT, *THE CHARITY COMMISSION*, 1 JULY 2024

<https://assets.publishing.service.gov.uk/media/65254203244f8e000d8e7323/the-advancement-of-education-for-the-public-benefit1.pdf>