



Public Engagement with Mathematical Research

Alison Kiddle
Millennium Maths Project



Three Stages of Engagement

1. “Elevator Pitch”
2. Engaging Activity
3. Explaining the Analogy

Audience?

- Child between 9 and 13 keen on maths and science, but with many other interests
- Teenager interested in pursuing a mathematical or scientific career
- Interested member of the general public

US SPACE TEAM'S UP GOER FIVE

THE ONLY FLYING SPACE CAR THAT'S
TAKEN ANYONE TO ANOTHER WORLD

(EXPLAINED USING ONLY THE TEN HUNDRED
WORDS PEOPLE USE THE MOST OFTEN)

THING TO HELP PEOPLE ESCAPE REALLY FAST
IF THERE'S A PROBLEM AND EVERYTHING IS ON
FIRE SO THEY DECIDE NOT TO GO TO SPACE

STUFF TO BURN TO MAKE THE BOX WITH
THE PEOPLE IN IT ESCAPE REALLY FAST

THING TO CONTROL WHICH DIRECTION
THE ESCAPING PEOPLE GO

PLACE WHERE FIRE COMES
OUT TO HELP THEM ESCAPE

PEOPLE BOX

DOOR

CHAIRS

PART THAT FLIES AROUND THE OTHER
WORLD AND COMES BACK HOME WITH THE
PEOPLE IN IT AND FALLS IN THE WATER.

COLD AIR FOR BURNING (AND BREATHING)
THIS PART HAD A VERY BIG PROBLEM ONCE

PART THAT GOES ALONG TO GIVE PEOPLE
AIR, WATER, COMPUTERS, AND STUFF.
IT COMES BACK HOME WITH THEM
BUT BURNS UP WITHOUT LANDING.



Choose your words

When talking about our specialisms to other specialists, we use specialist vocabulary.

When talking to a general audience, we need to decide which terms we can't live without, and define them clearly!

‘Elevator Pitch’

Prepare a pitch of 1-2 minutes to explain the essence of your research

Make sure you capture the ‘big question’ or ‘big idea’

Try to avoid using too much technical language

What makes you excited about your research? Communicate that!



An Engaging Activity

Have a go at these activities designed for school students.

Could you adapt any of these ideas to introduce your own research area to young people?



UNIVERSITY OF
CAMBRIDGE



BREAK

Finding the right analogy

- You can ‘hang’ your research on many different potential ‘hooks’.
- Consider what’s already familiar to your audience
- Choose an analogy so that once they ‘get it’, they feel as if they have insight into what it is you do.



School Maths - Content

Properties of numbers – primes, factors, multiples. Fractions, Ratio and Proportion

Simple algebra – linear equations, straight line graphs

Area, volume, angle properties of simple shapes, coordinates

Simple probability, averages, representing data using simple charts



School Maths - Processes

- Posing questions, making conjectures
- Exploring and noticing structure
- Thinking strategically
- Working systematically
- Reasoning, justifying, convincing and proof
- Mathematical modelling
- Representing
- Visualising





School Science

Energy, electricity and forces

Chemical and material behaviour

Organisms, behaviour and health

The environment, Earth and Universe

Working Scientifically

Create An Engaging Activity

Give a flavour of what it's like to undertake research in your area.

Consider:

Equipment? An experiment?

A Worksheet? (needs to be self-explanatory)

A computer? (only if it adds value)

Making the link

Once your target has tried your activity, complete the analogy by explaining the link between what they did and your research.

- Poster or handout?
- Any interesting preliminary findings to share?
- Where can people go to find out more if your area of research interests them?

Be prepared for questions, both specific and general!



What next?

Think about getting involved in an outreach event – Science festival?

Local schools are always interested in ambassadors from academia!

ajk44@cam.ac.uk