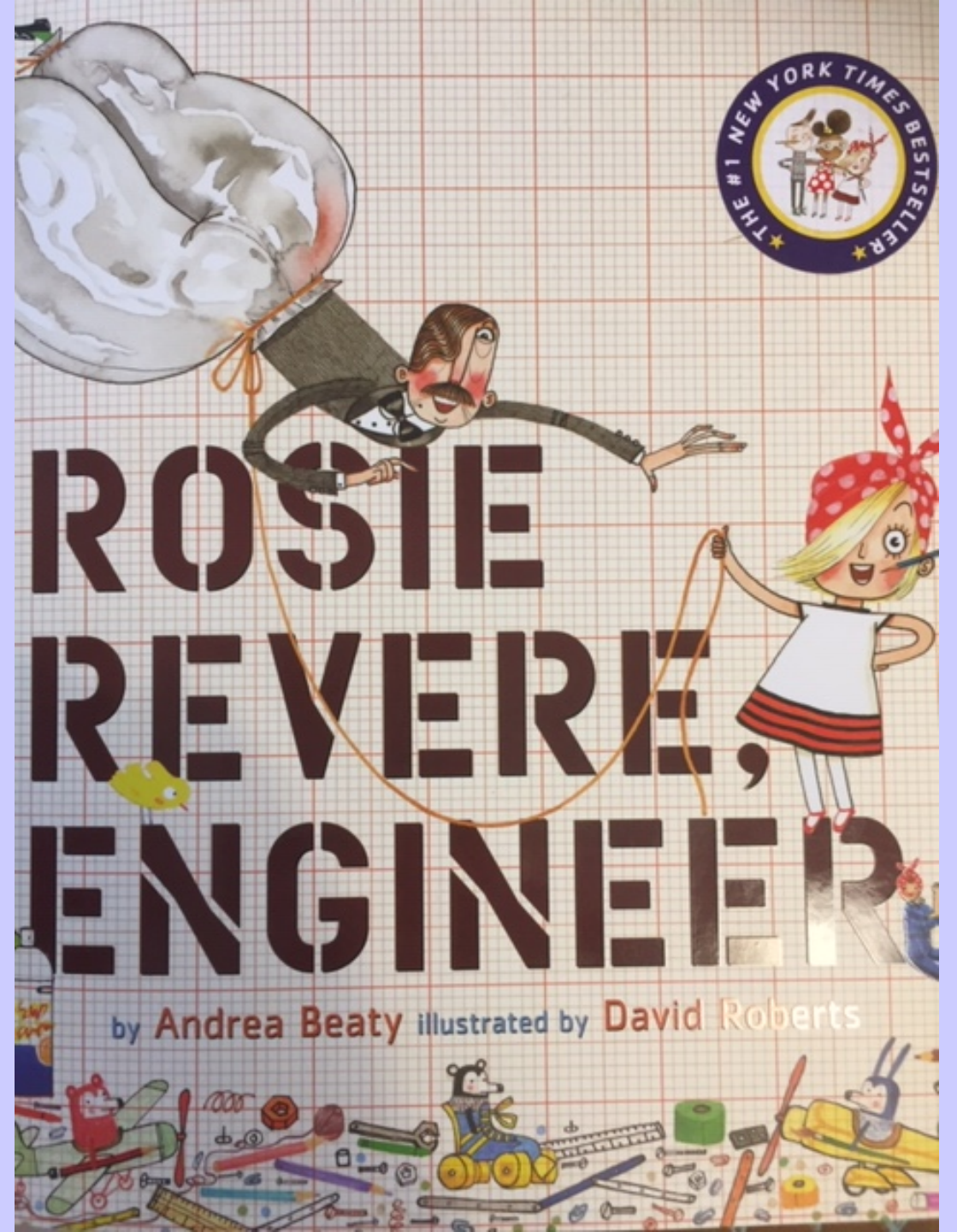


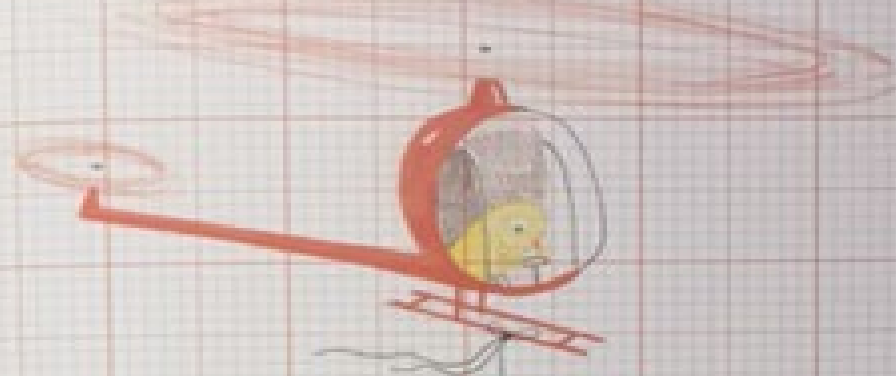
Presentation by

**Dr Laura
Fogg-Rogers and
Dr Jane Andrews**

March 2019

Connected by Curiosity – Enhancing STEM engagement and representation through storytelling





ROSIE REVERE, ENGINEER



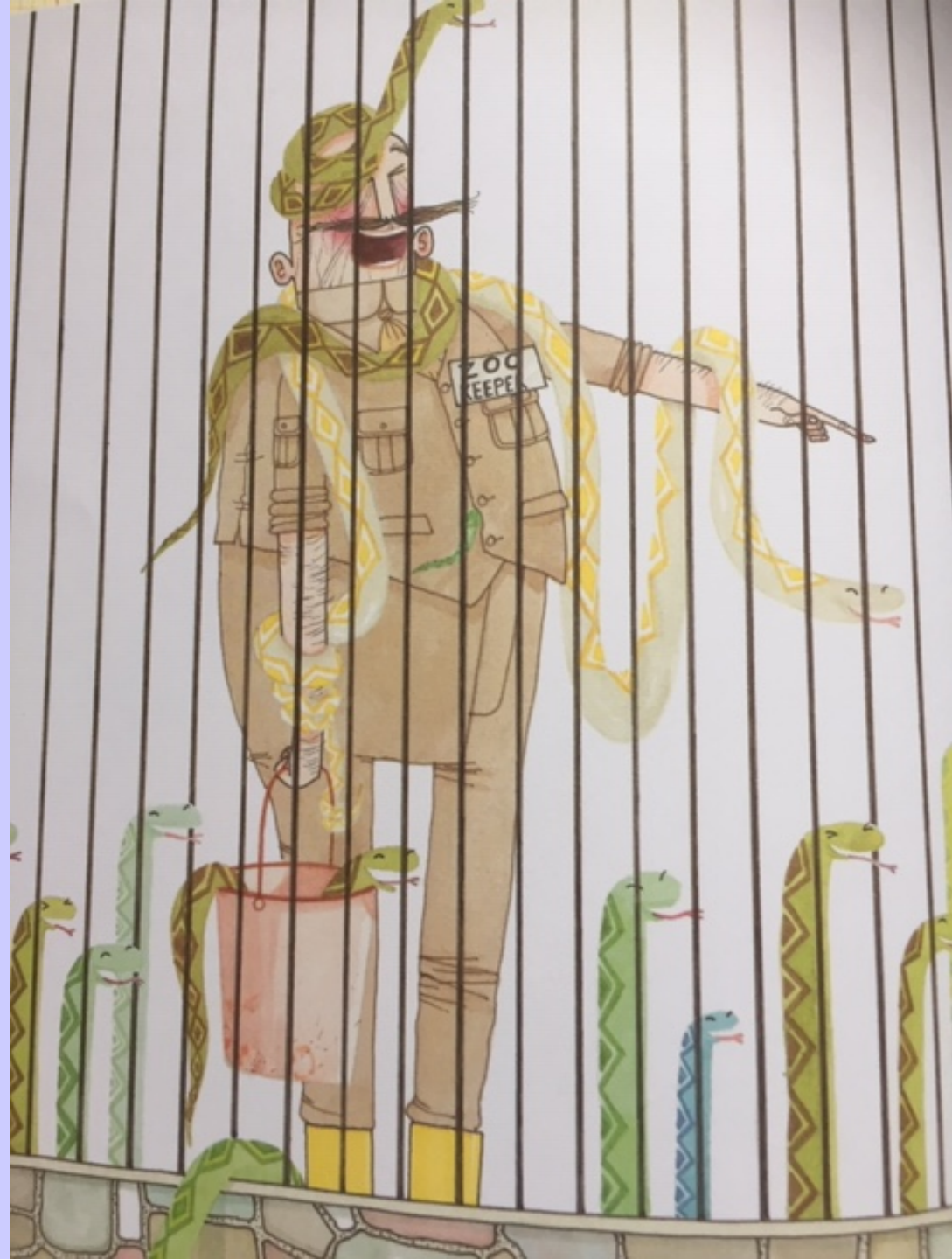
by Andrea Beaty
illustrated by David Roberts
Abrams Books for Young Readers, New York











Did you enjoy listening to the first part of that story?



What are your memories of being read to?

By someone at home?

A teacher?

And now...?

An audio book?

Radio/podcast?

What we know about book sharing, reading aloud.

“Results indicated that **shared reading was associated with children’s academic achievement directly and indirectly** through receptive vocabulary and early academic skills. Also, **the frequency of shared reading predicted the outcome measures**, over and above other learning activities. **Associations were stronger among low and middle socioeconomic status groups** compared to the high socioeconomic status group.” Shahaiana et al (2018)

And the benefits continue...,,

National Literacy Trust (2016) strong correlation between **older children being read to and children choosing to reading independently.**

74% of 8 to 13 year olds who were read to daily, also read independently (compared to 24% of children who were not read to daily but still read independently)

National Literacy Trust (2018) **children who enjoy reading were significantly less likely to have mental health problems.**

Learning to read transforms lives.

Reading is the basis for the acquisition of knowledge, for cultural engagement, for democracy, and for success in the workplace. Illiteracy costs the global economy more than \$1 trillion (U.S. dollars) annually in direct costs alone (World Literacy Foundation, 2015).

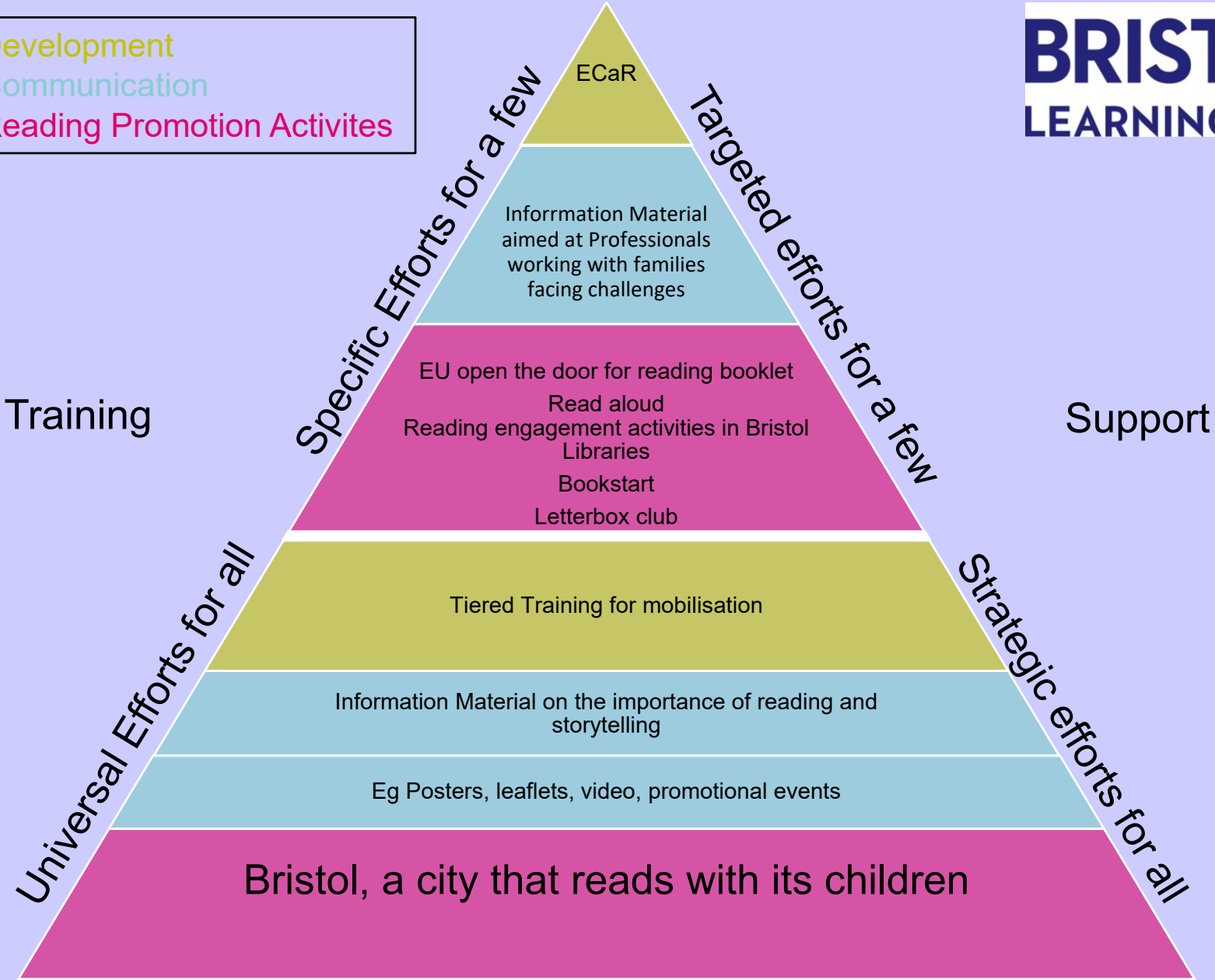
Castles, Rastle and Nation (2018)

Bristol A Reading City: the City Where We Read to Our Children

Designed to encourage parents and caregivers, particularly those facing the greatest challenges, to share books and read to and with their children from the earliest years. The aim will be to develop children's language and create a love of reading, increasing their vocabulary and ability to express themselves.



- Development
- Communication
- Reading Promotion Activities



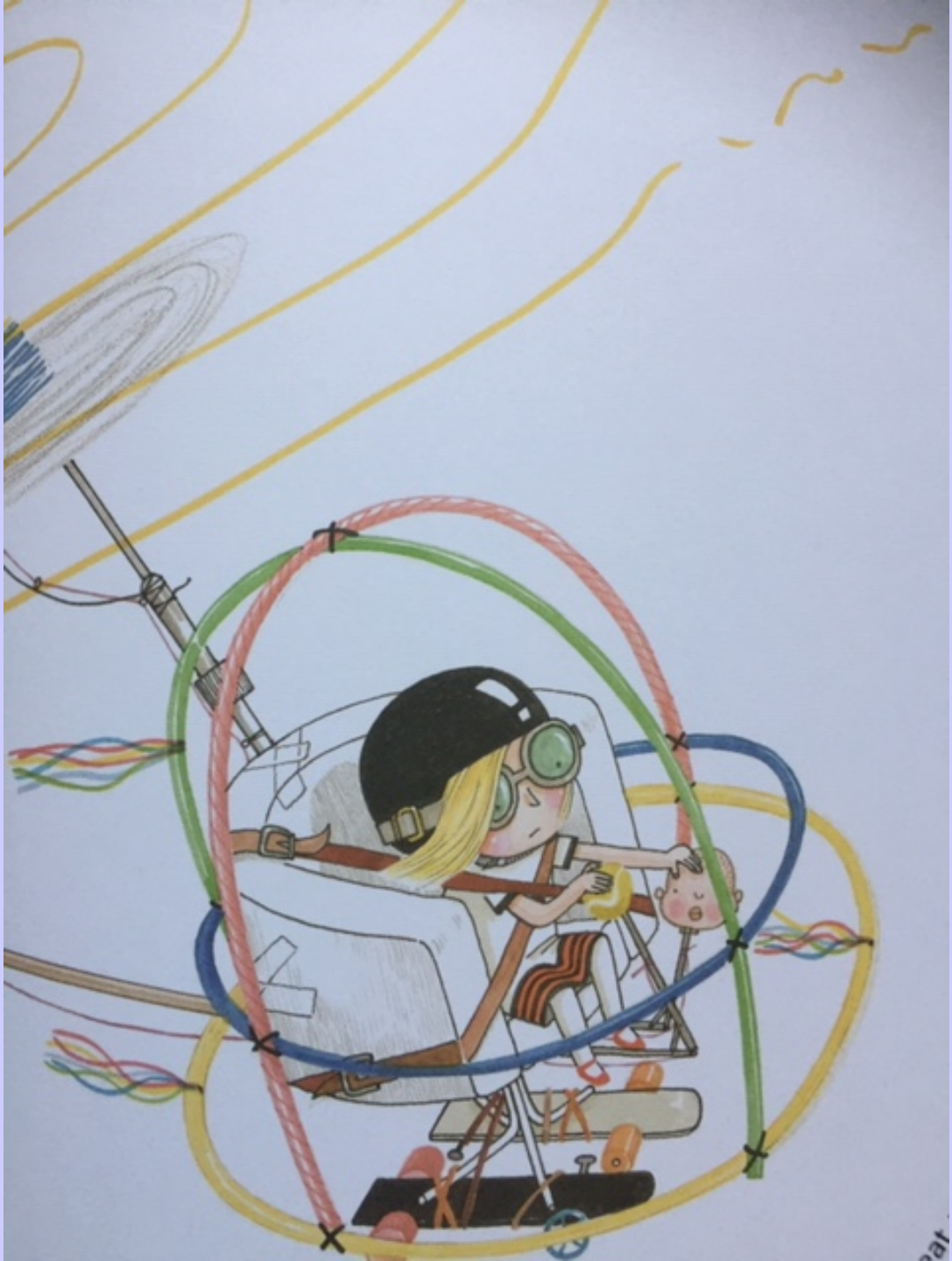
The first phase of the project will:

- Identify six Children's Centres and Reception classes in areas of the City where high numbers of families are eligible for Free School Meals
- Work in partnership with the Library Service, the Early Years Service, Reading City, Health and Social Care, to create 'Cloakroom Libraries' in these settings, stocked with high quality books that are accessible to families and can be borrowed to share at home
- Recruit, train and coach parent volunteers as Community Reading Ambassadors to encourage their peers to share picture books and read with their children, providing support as appropriate
- Work with partners in the Education Service and Universities to provide ongoing professional development for these parents, enabling them to be successful Community Reading Ambassadors/Peer Supporters
- Set up a communication strategy/campaign to promote the importance of early talk and reading with children and share the learning across agencies





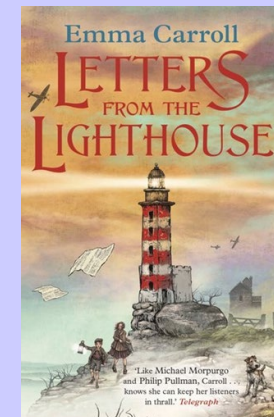
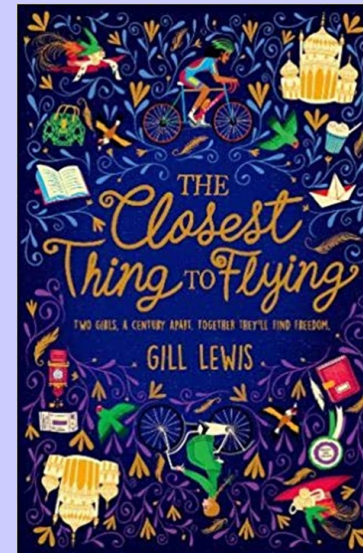
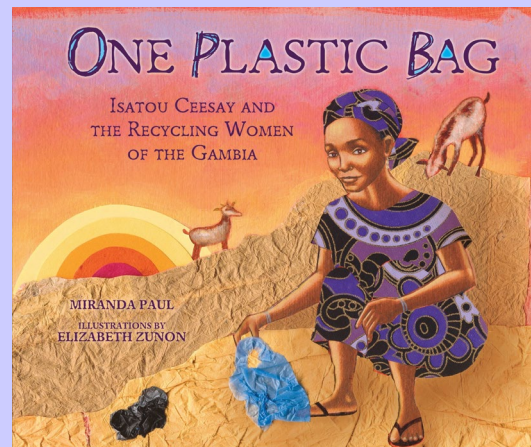
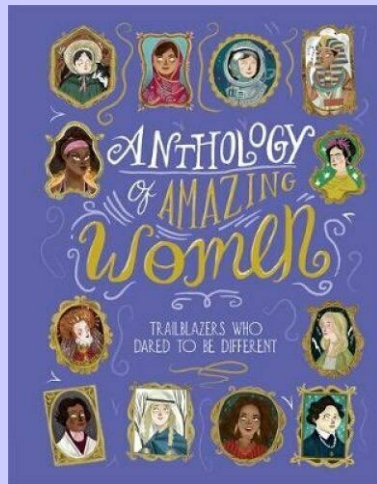
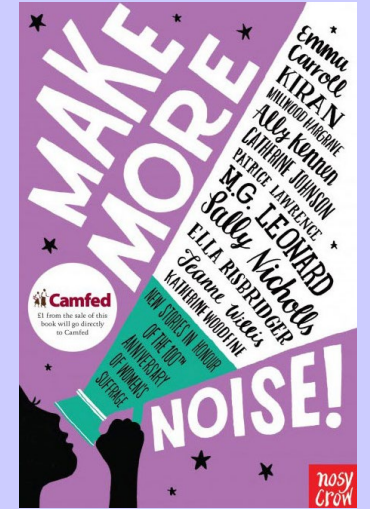
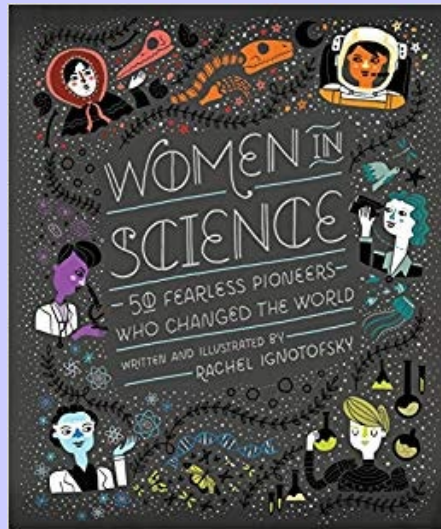
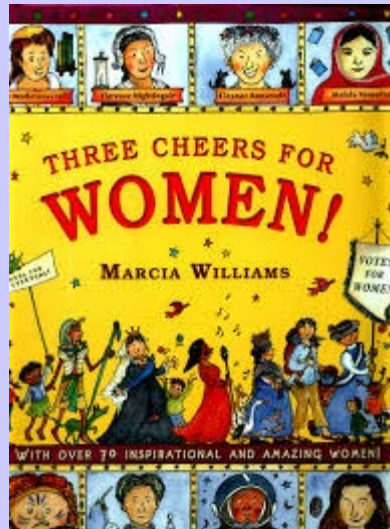
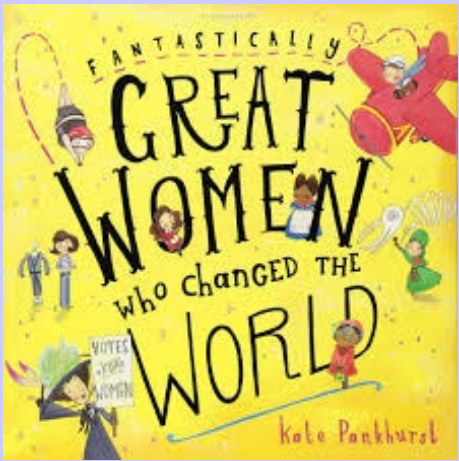








What else do books teach – books that enable you to dream big dreams





STEM has an image problem

11%

of engineers are women

5%

of primary school teachers have a
STEM higher qualification

Gender identity is formed between
ages

3-7

Children, decide on the
appropriateness of science as a
career before age

11



Mentoring ... and role modelling



Social Cognitive Theory

“An individual's learning is not only related to their personal capabilities and experience, but also to their observations of others within the context of social interactions, experiences, and outside media influences”. Bandura, 1977

Direct learning

Experience of success and emotional arousal = mastery



Indirect learning

Social norms and social persuasion
Vicarious experience = role modelling

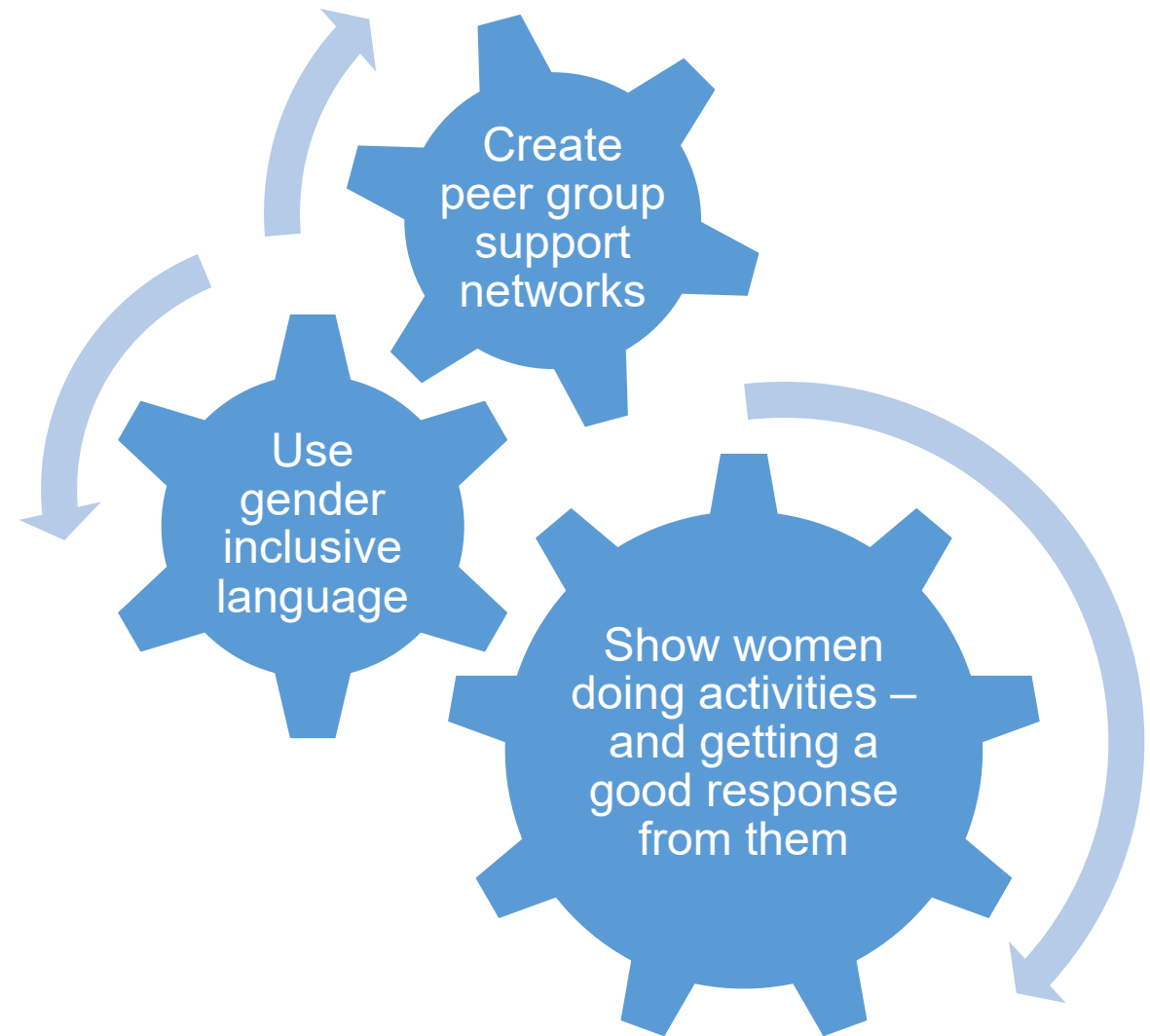


Fogg Rogers, L., Sardo, M. and Boushel, C. (2017) [Robots vs animals: Establishing a culture of public engagement and female role modelling in engineering higher education](http://eprints.uwe.ac.uk/30921). Science Communication, 39 (2). pp. 195-220. ISSN 1075-5470 Available from: <http://eprints.uwe.ac.uk/30921>

Vicarious experience and social norms

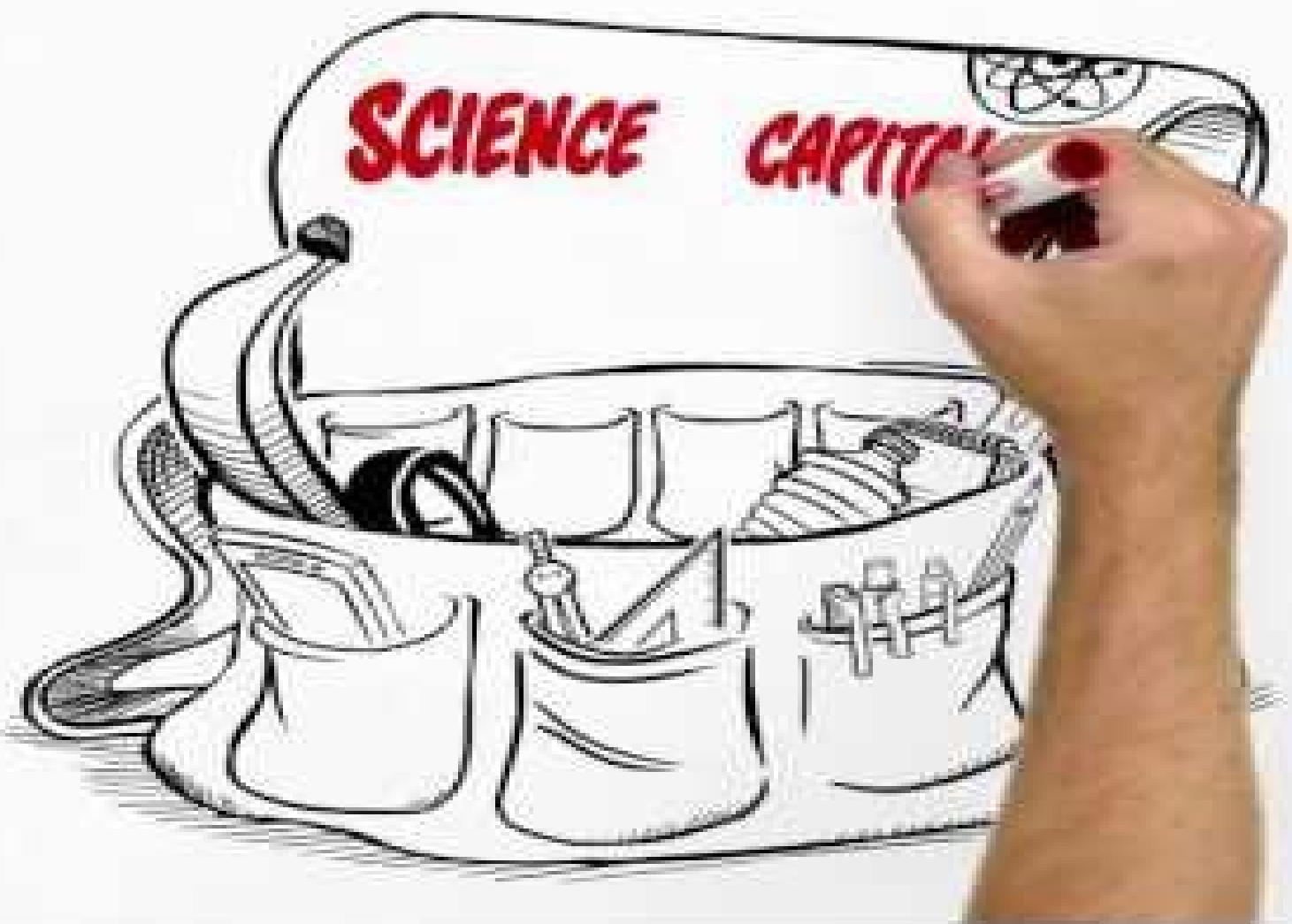
To support an inspirational STEM education for every children we need to start from the early years to change social norms....

Wider reading and books are essential!





SCIENCE
CAREERS
STEM
MATHS

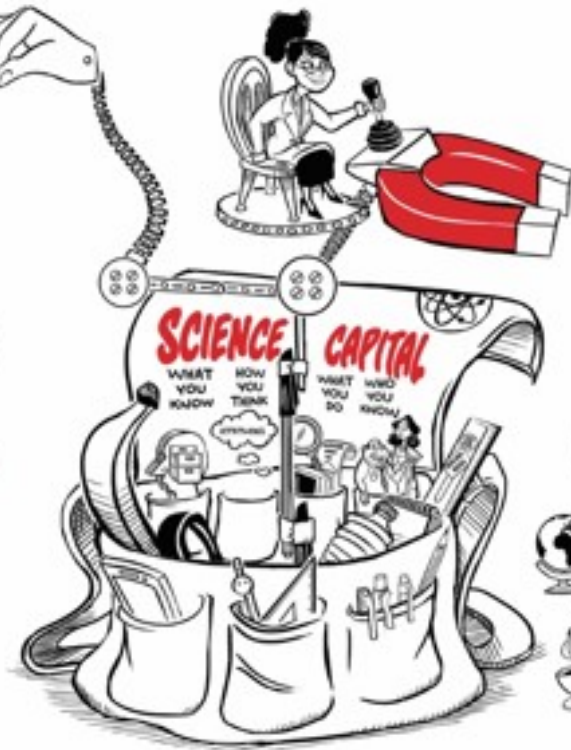


SCIENCE CAPITAL

TO **IMPROVE** THE LIVES OF ALL OF OUR **CHILDREN**



RESEARCH SHOWS THAT **MOST STUDENTS** FIND SCIENCE INTERESTING



MORE STUDENTS FROM DIVERSE BACKGROUNDS



SCIENCE CAPITAL IS LIKE A **HOLDALL** THAT THEY CARRY AROUND



AND UNDERSTAND WHY DIFFERENT GROUPS AREN'T TAKING THEM FURTHER



IT HELPS US SEE ALL THE **INFLUENCES** THAT LEAD TO STUDENTS **CHOOSING STEM SUBJECTS** OR NOT



EVERYBODY HAS DIFFERENT AMOUNTS OF SCIENCE CAPITAL



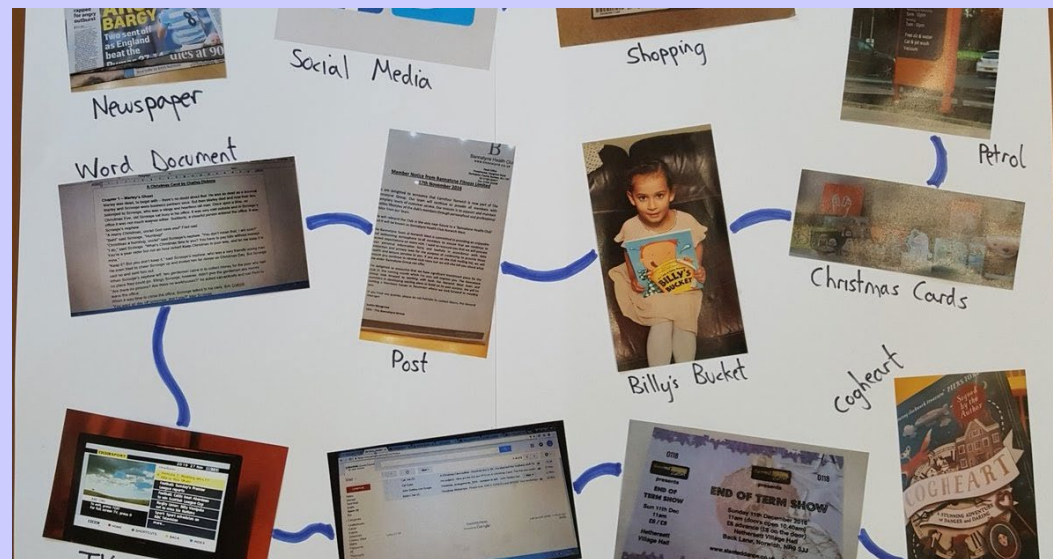
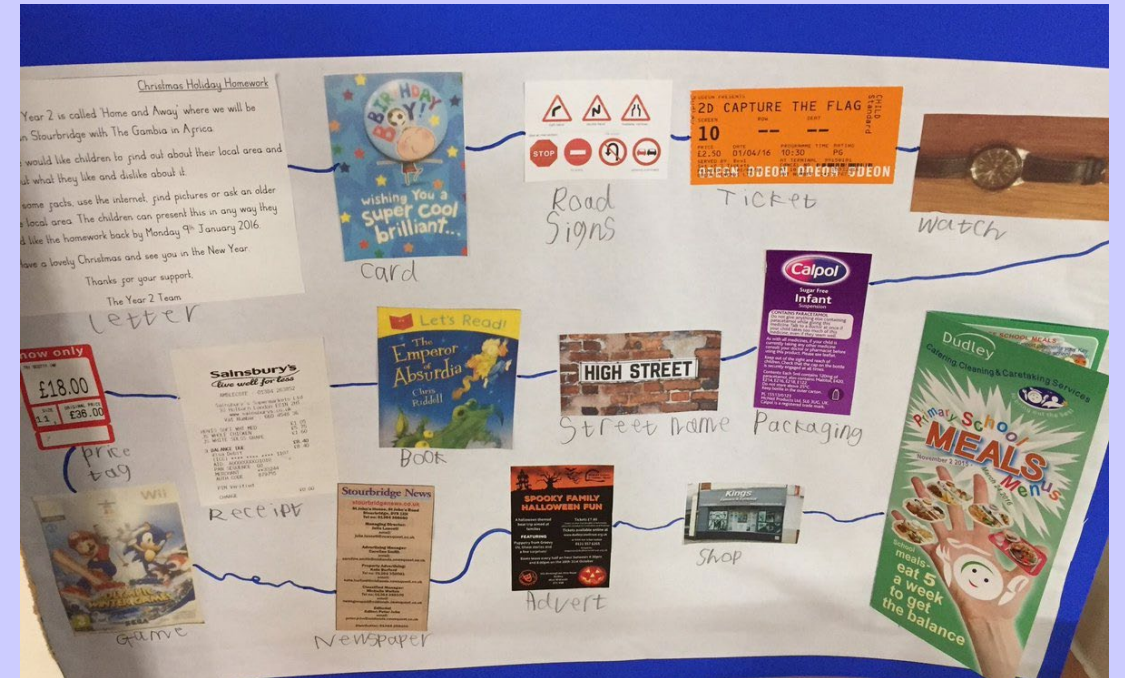
SCIENCE CAPITAL COMES FROM A VARIETY OF SOURCES



Literacy and STEM

On your own, draw a picture of yourself when you were younger. Identify your thoughts about STEM then. What did you read? Where did you go? Who did you know?

On your table, compare your drawings and identify some common themes.





4 MAR 2019

FREE event: Boosting mentoring for women in STEM



28 FEB 2019

Student engineers visit Leaders Award winner's school



FAMILY SCIENCE FESTIVAL

Sunday 17th March 2019
1.00 pm to 5.00 pm

The Corn Exchange, Dorchester

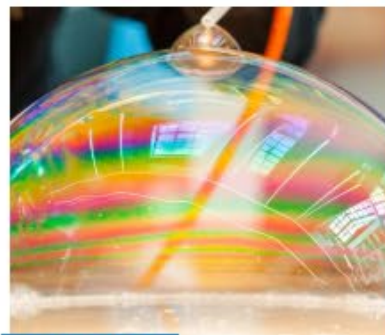
26 FEB 2019



Family Science Festival



25 FEB 2019

Evening with a Popular Science



 Curiosity Connection 
@BrisPrimarySTEM

Sign up to the FREE mentoring for women in STEM event @UWEBristol on 3rd April curiositybristol.net/2019/03/04/fre ... @UWEWomenLikeMe @EngineeringUWE @SciCommsUWE @RAEngNews

Embed View on Twitter

Upcoming Events

- Talk STEM on Skype
8 Mar 2019 – 17 Mar 2019
online
Talk STEM on Skype is a STEM Ambassador

Curiosity Connections

The network for inspirational primary STEM education in the Greater Bristol region.

<https://curiositybristol.net>



Connecting primary science teachers and communicators

Curiosity Connections Bristol supports people who inspire primary Science, Technology, Engineering, and Mathematics (STEM) learning in the Greater Bristol region. The network brings together primary school teachers, science communicators, education providers, and people working in STEM industries. Through a free website and newsletter, we offer:

- Shared experiences for local primary teachers and STEM Ambassadors
- Signposting to STEM Ambassador toolkits and training, and teacher CPD
- Regional curriculum and activity ideas
- Stories and events to enrich your own professional learning

aspirations regarding STEM careers, as children's attitudes towards STEM are largely formed before age 13. An inspirational science education at primary school is vital for society - boosting the future of our STEM industries and a thriving UK economy.

How can you support our network?

STEM is at the heart of our West of England region, and so is Curiosity Connections. Our local network showcases the best of the West and our amazing science teachers, industries and communicators.

We need your support to keep the network running - for more information contact curiosityconnections@uwe.ac.uk

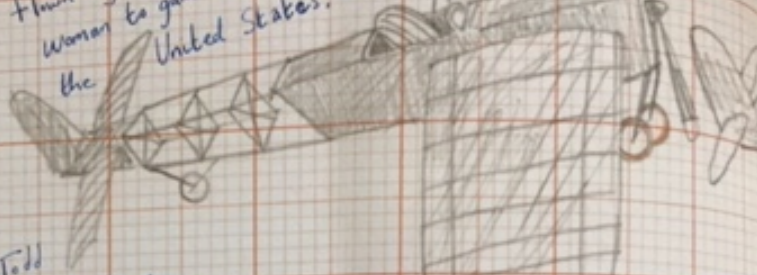


BRISTOL
LEARNING CITY

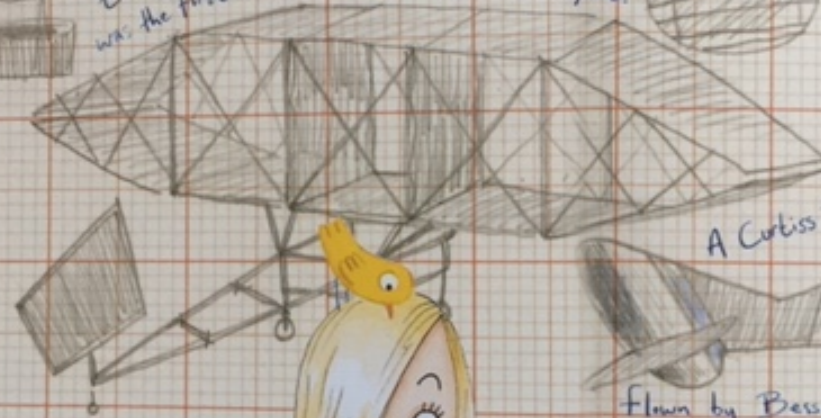
In 1783, Elisha ...
to fly in a hot air balloon. The hot air balloon
was called La Grosse.



A Blériot monoplane. Similar to the one
flown by Harriet Quimby, the first
woman to gain a pilot's license in
the United States, in 1911.



E. Lillian Todd
was the first woman to design airplanes, in 1906.



A Curtiss JN-4, known as a 'Jenny'
flown by Bessie Coleman in 1908.





