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Using augmented reality to teach primary sciences

Northern Digital Storytelling Festival - 27 03 23

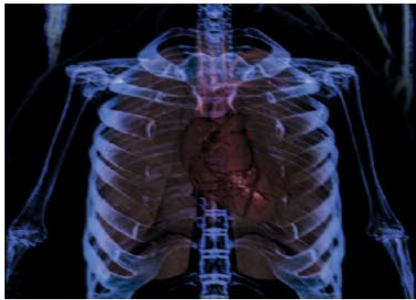
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Ph.D. Student, University of York.

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epic
SCIENCE



ARGON (Ar)



Point your iPhone, iPod Touch or iPad at the marker to view a 3D hologram

• Discovered:	1894
• Atomic Number:	18
• Atomic Weight:	39.948
• Density At 0 C:	101.325 kPa
• Boiling Point:	-189.35 C
• Freezing Point:	-189.2 C

Argon (symbol Ar) is a colorless and odorless gas, makes up 0.93% of our planet's atmosphere. This makes it the third most abundant element in our atmosphere after nitrogen and oxygen. It is a noble or 'inert' gas, found in group 18, period 3 of the periodic table which does not react with other elements under normal conditions.

Uses: You can find Argon used in light bulbs, lasers, double glazing for home and even scuba dry suits!



Stakeholders



Nicky Waller

Primary Science Advisory
Teacher at CIEC (Centre for
Industry Education
Collaboration)
University of York
UK



Dr Katy Bloom

Associate Professor
School of Education,
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York St John University
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Jake Reeves Kemp

Computing Specialist Lead
Ebor Academy Trust
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Emma Davies

Science Academy Leader
Ebor Academy Trust
York
UK



CENTRE for INDUSTRY
EDUCATION COLLABORATION



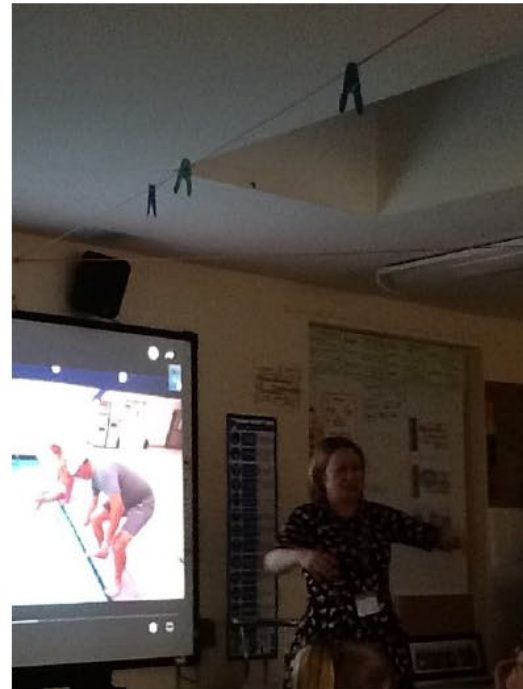
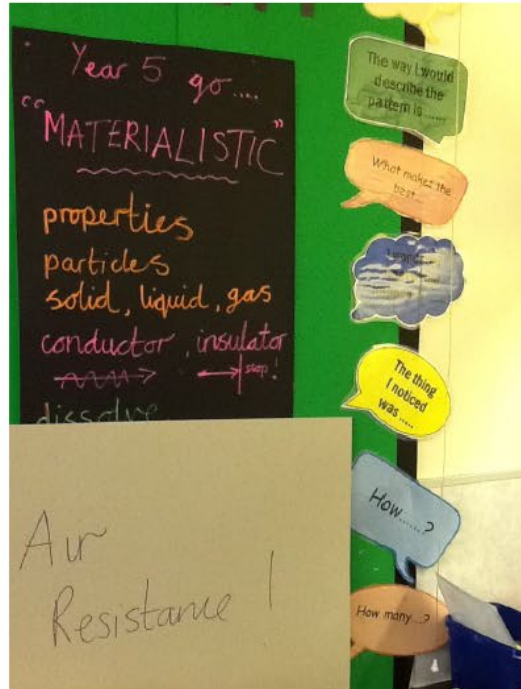
Ebor Academy Trust

Pupils - Keystage 2



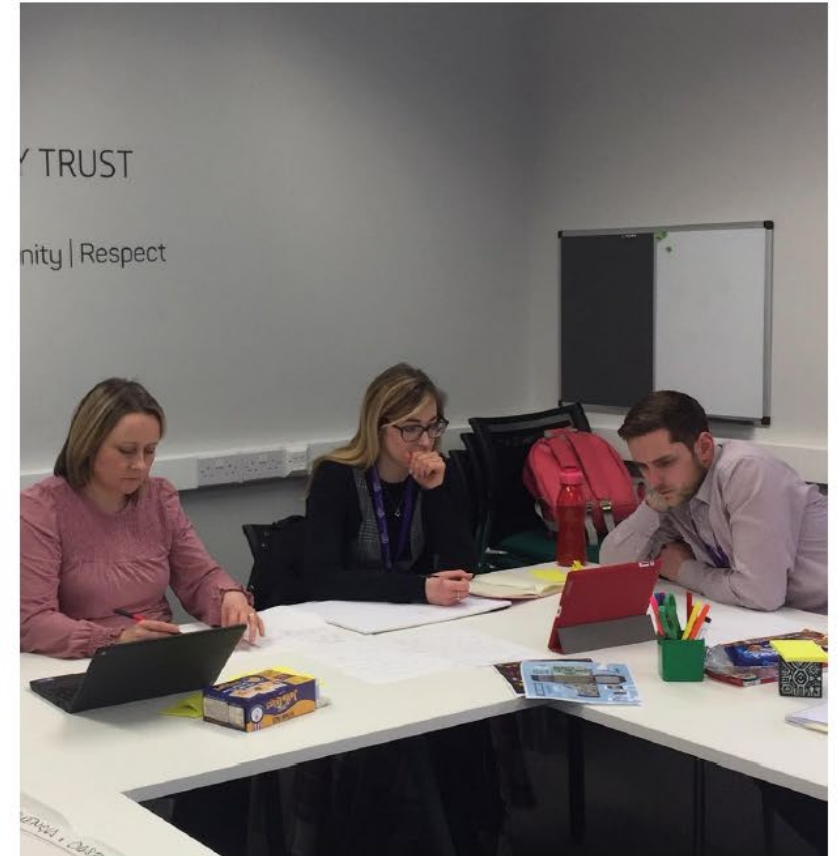
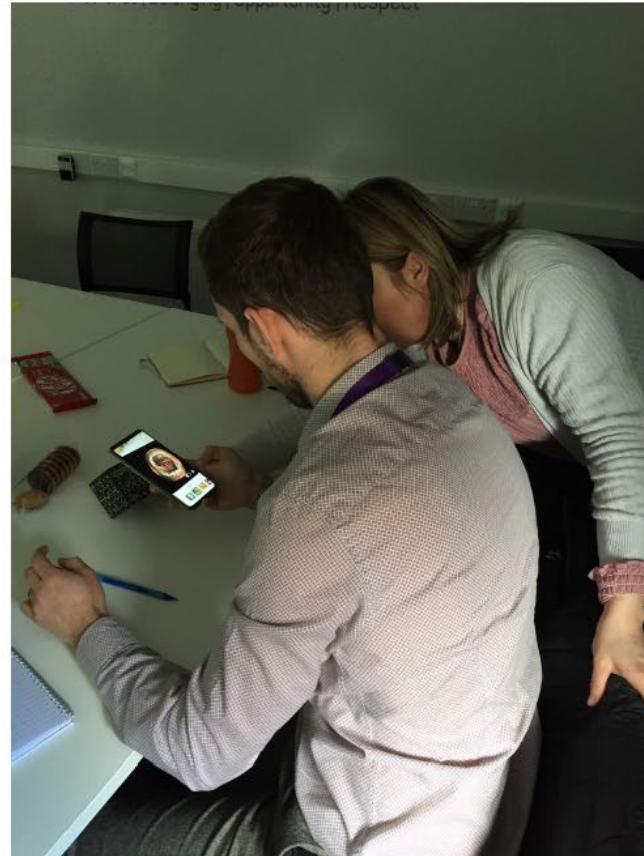
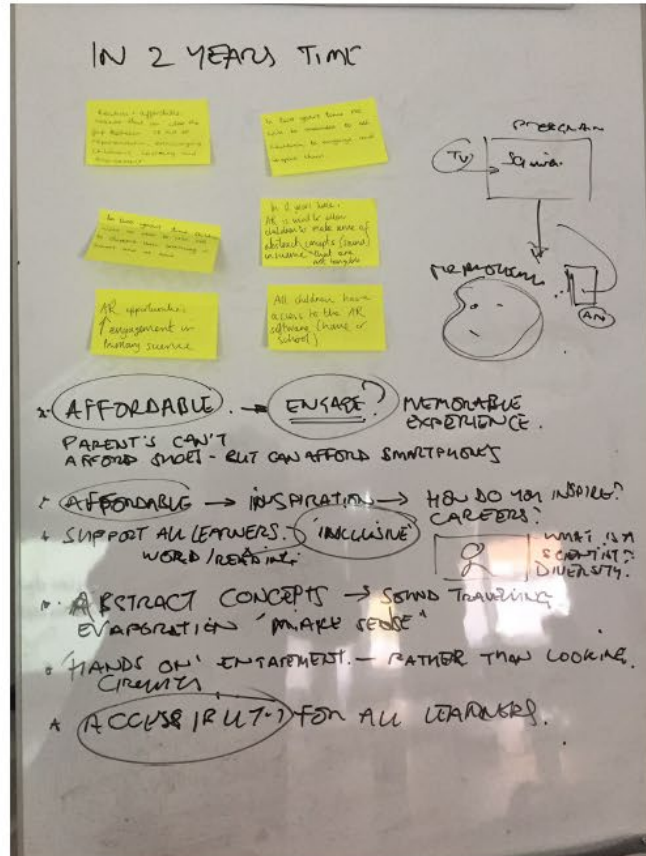
- / Collaborators
- / Understand subject area
- / Empathy

Exploration: Classroom Observations



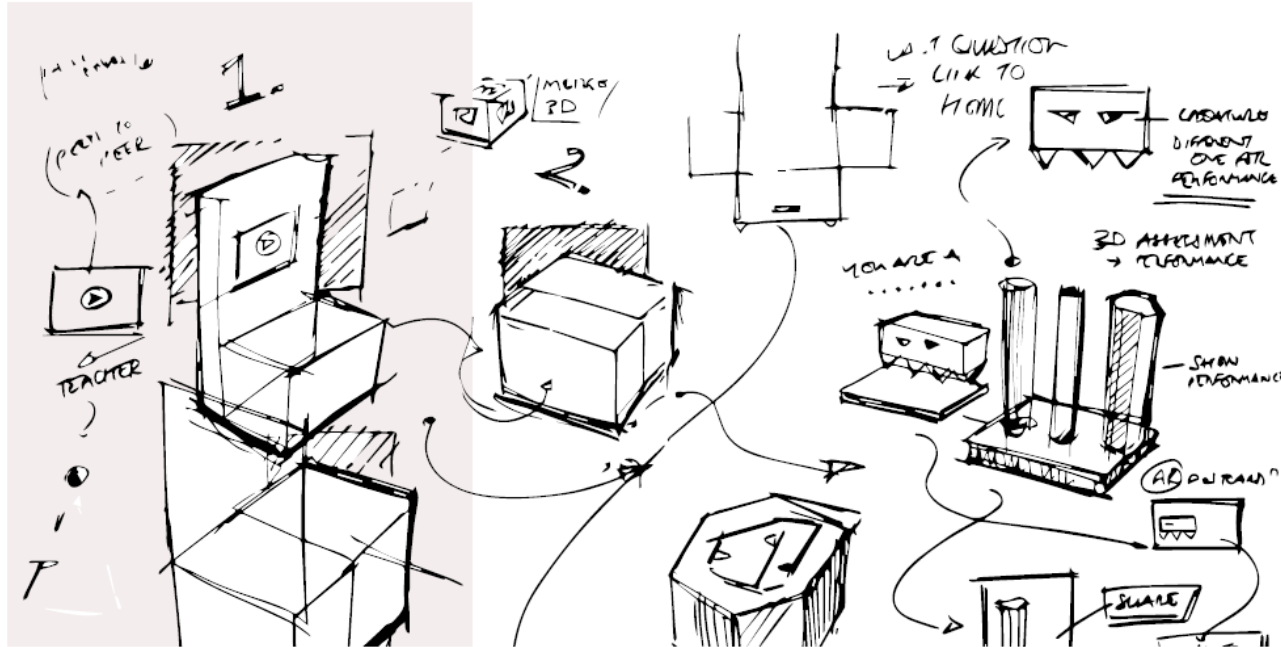
- / Comical Videos
- / Characterisation
- / Stories happened?

Exploration: Focus Groups / Design Sprints



/ Benefit of using medium?
/ Storytelling?

Creation: Concept Work

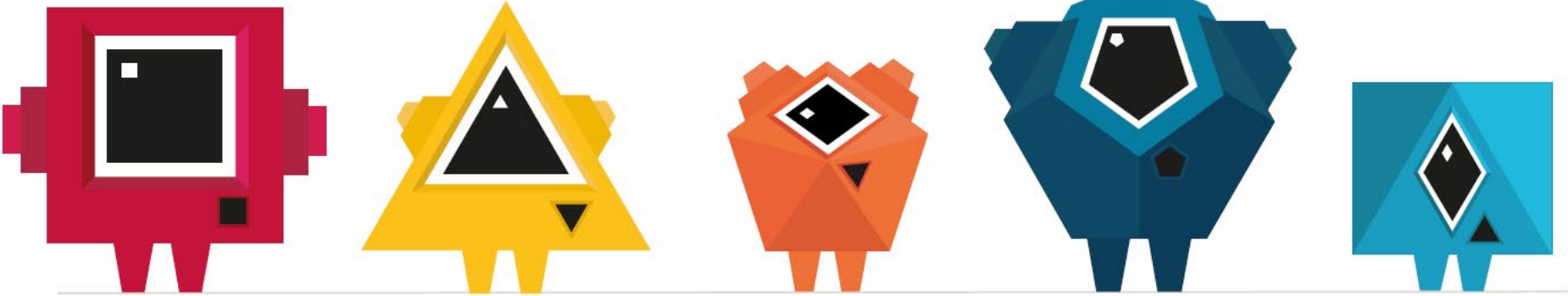


- / Curriculum Alignment
- / Cross Curriculum (STEM)
- / Connecting Science to Real Life
- / Appropriate Language (KS2)
- / Science Capital (sharing stories)

- / Science Event
- / Change Content (Cloud based)
- / Image Recognition
- / Group Related



Creation:
Character Design



HEX

TETA

ICO

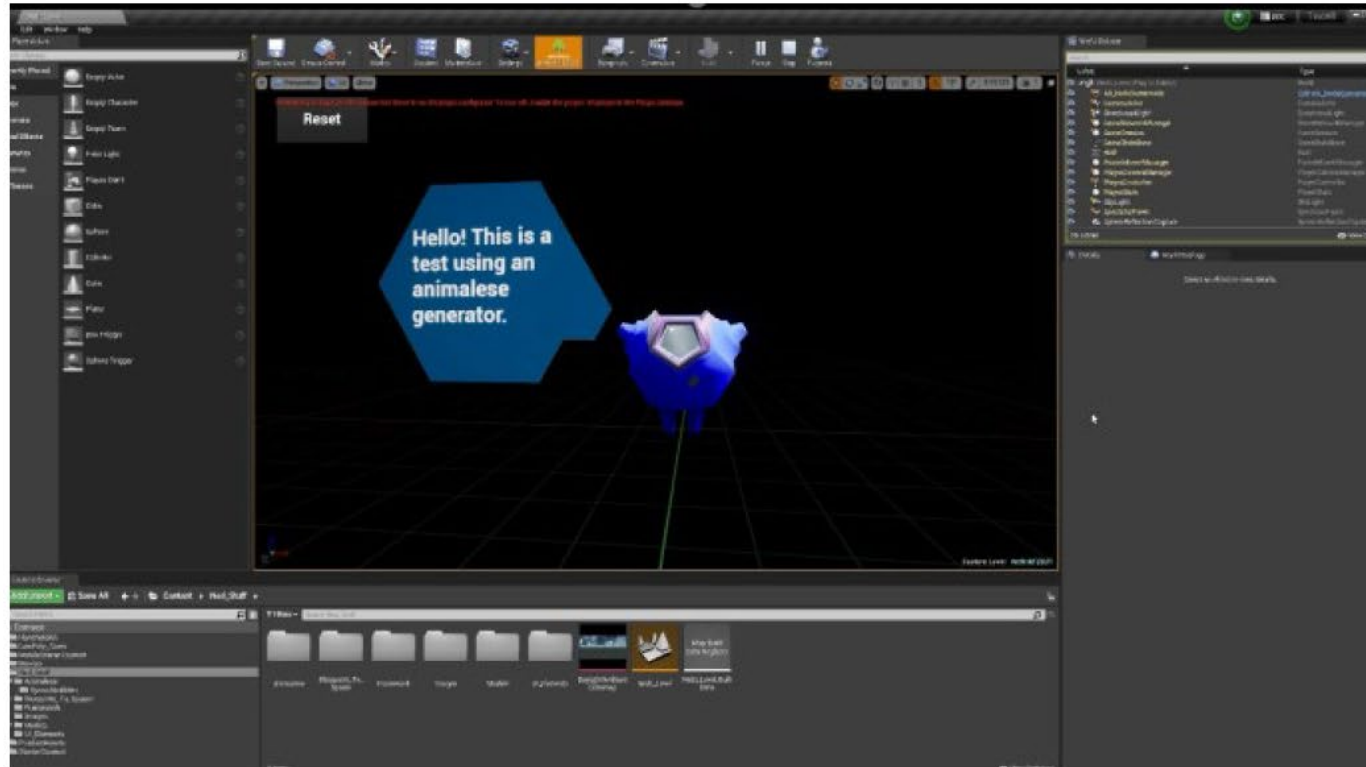


How do you reduce, recycle, in school and at home?

What types of materials do we use in our everyday lives?

Why does reduce, recycle, help the environment?

Creation: Character Design



Creation:

AR Interaction

1. Renewables

Touching on the wind turbine (learning about parts of the turbine)

2. Habitats

Choosing options to help an animal survive. Shelter, food, water (problem solving)

3. Materials

Choosing which materials to remove from the ocean to stop pollution (gaming)

4. Healthy Living

What is a burger made from? (what's in a burger)

5. Earth Science

Character in a car, too hot. Using dial to get hotter and colder (slider to make temp hotter and colder)

Creation: Storyboarding

Renewables:

1.

(6 Seconds)

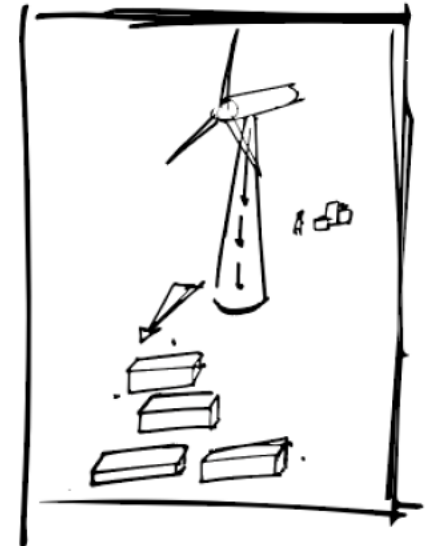
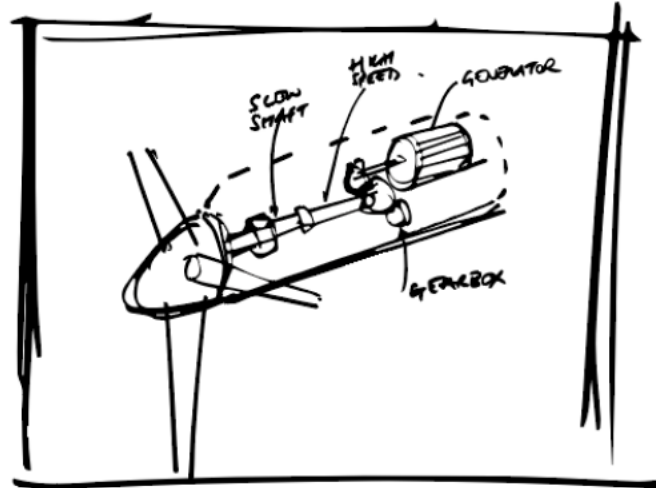
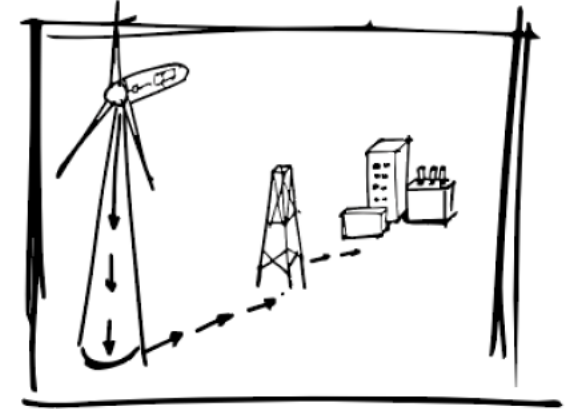
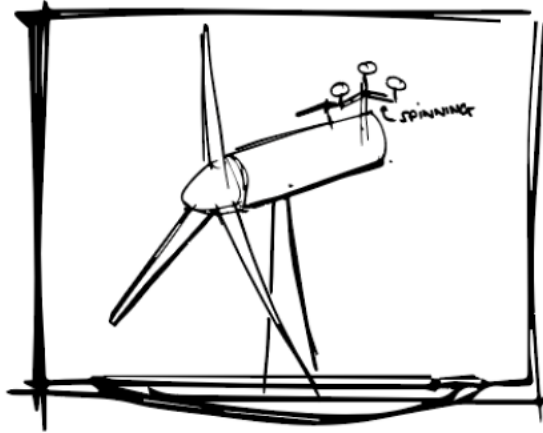
FRAMES
1 - 150

Narration:

The wind pushes the air and spins
the blades of the windturbines

(Close up of the top of a windturbine)

(3D Arrows floating above, as the
wind turbine blades begin to rotate)



Creation: Storyboarding

Materials:

2. Narration:

(4 Seconds) Which items do you think could be bad for the environment? Why do you think this?

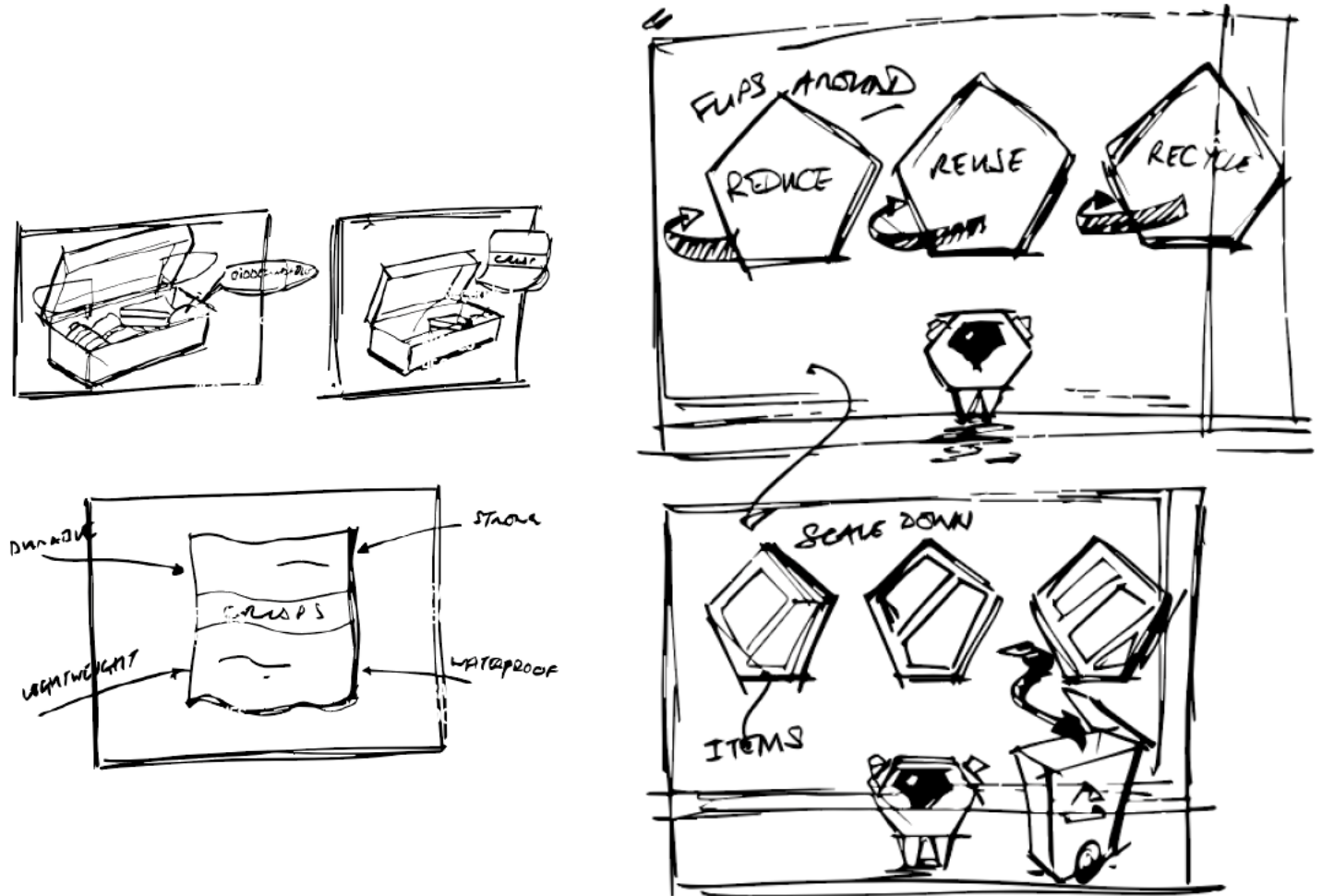
FRAMES
450 - 550 (Character asks question / speech bubbles pop up to reveal the answers)

Yoghurt
Banana Peel
Sandwich
Crisps

(10 Seconds) (Lunchbox fades / scales away)

FRAMES
550 - 800 (Close up of Crisp Packet - scale up)

(15 Seconds) A plastic crisp food wrapper is strong, durable, lightweight and waterproof. This material makes it good for protecting food.



Creation: Storyboarding

Habitats:

3.

Narration:

(12 Seconds)

Located above the forest floor is the understory layer. Small shrubs and trees can grow here. Understory plants often produce flowers that are large and easy to see.

FRAMES
1525 - 1825

(Animate the visibility of each layer)

(12 Seconds)

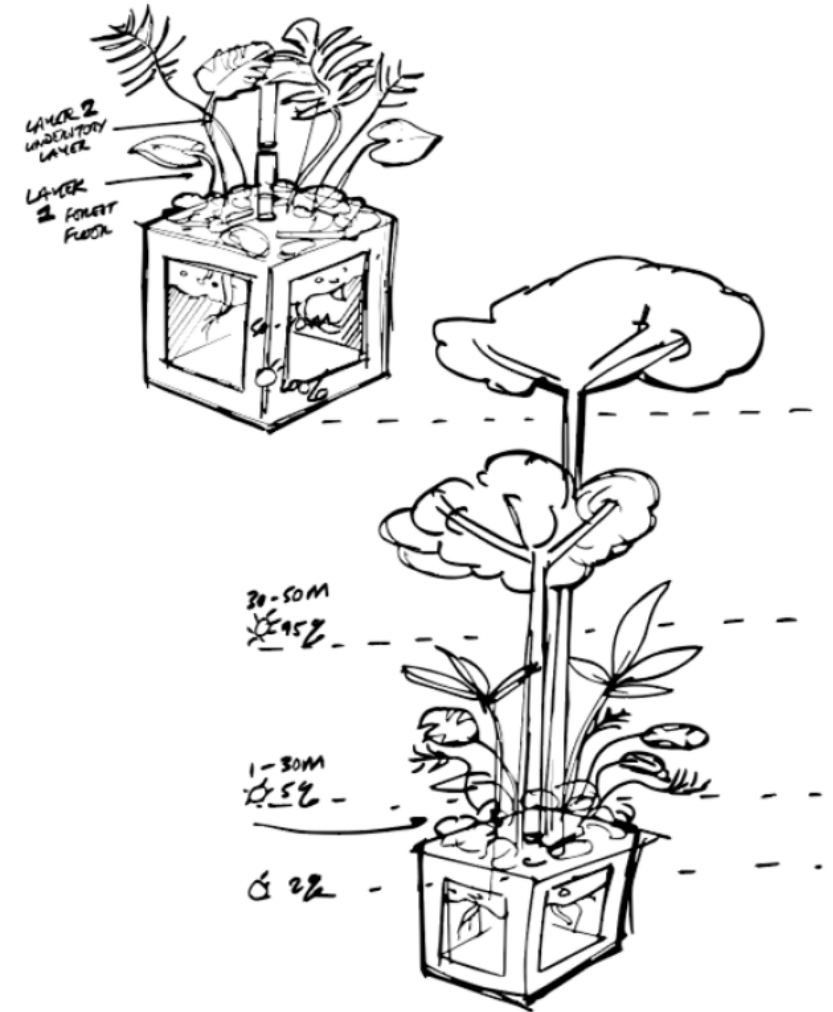
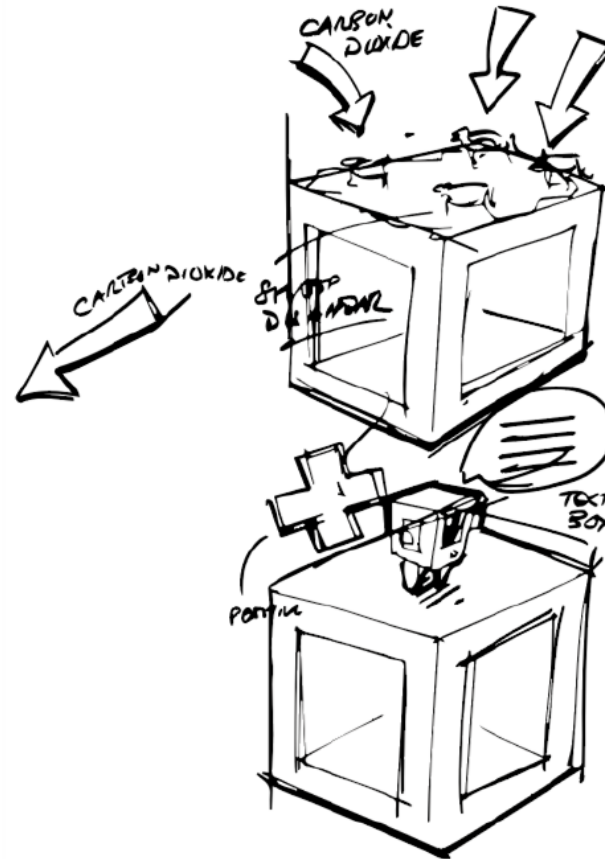
The canopy layer forms a dense network of leaves and branches as a roof over the two remaining layers. With so much food available, more animals live in the canopy than any other layer in the rainforest.

FRAMES
1825 - 2125

(11 Seconds)

The top layer of the rainforest is the emergent layer, where trees can grow up to 60 metres tall due to larger amounts of sunlight. Here, you will find living bats, butterflies and awaiting predators such as hawks and eagles.

FRAMES
2125 - 2400



Creation: Storyboarding

Healthy Eating:

4.

Narration

(16 Seconds) One of the byproducts of cow digestion is a gas called METHANE.

FRAMES

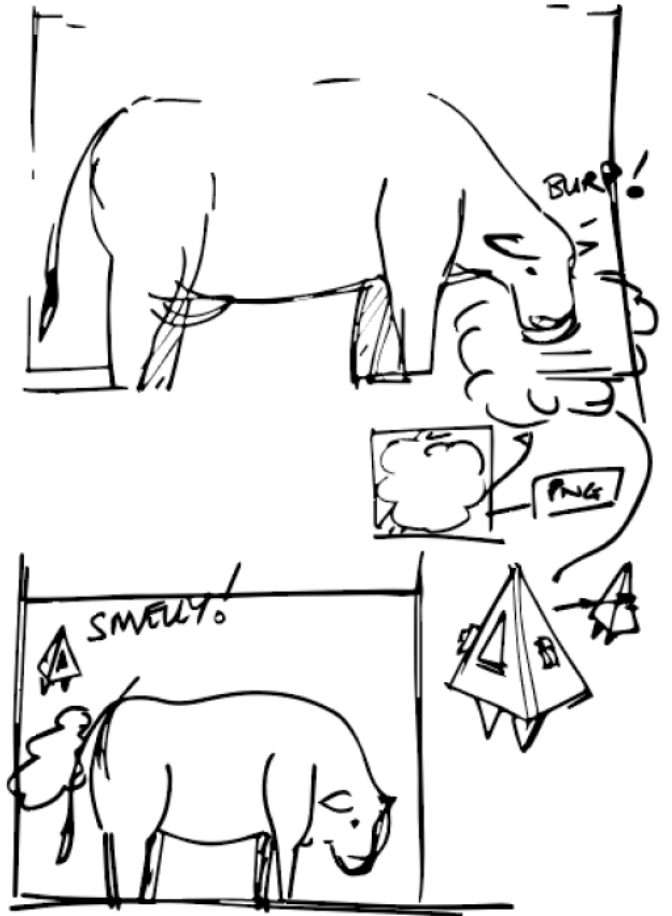
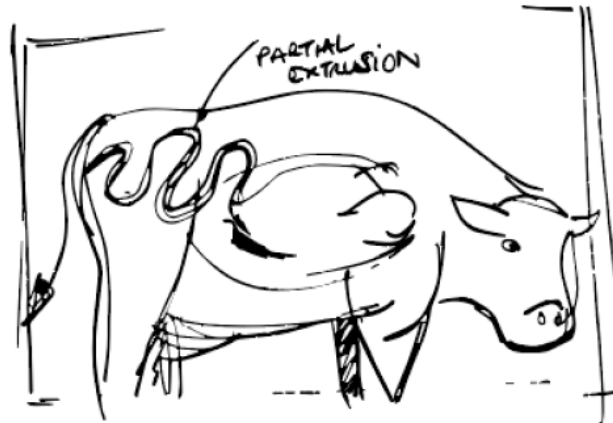
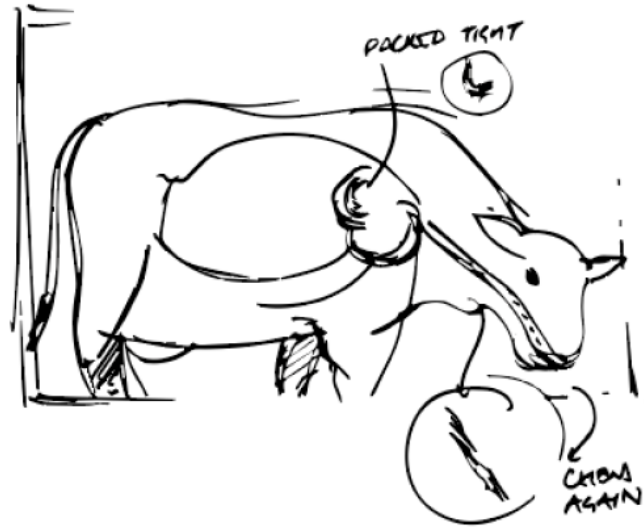
1875 - 2275 Methane is largely burped out by cow BURPS!
Did you know cows burp up to 60 times a day!

(Cow makes a large BURPING sound - blows the character backwards)

(10 Seconds) Also, the fermentation in a cow's stomach produces a small amount of methane gas when a cow FARTS! SMELLY!
2275 - 2525

(Cow lets out a FART - sound added - character moves quickly out of the way!)

(12 Seconds) Methane is an important gas that's playing a role in global warming, and we need farming industries to...
2525 - 2625



Creation: Storyboarding

Earth Sciences:

5.

[17 Seconds] Over the years, human activities have caused more carbon dioxide (also known as CO₂) to be released into the atmosphere. For example, burning fossil fuels - such as coal and oil - are changing Earth's natural greenhouse effect.

FRAMES
2100 - 2525

(Show factories, and cars popping up)

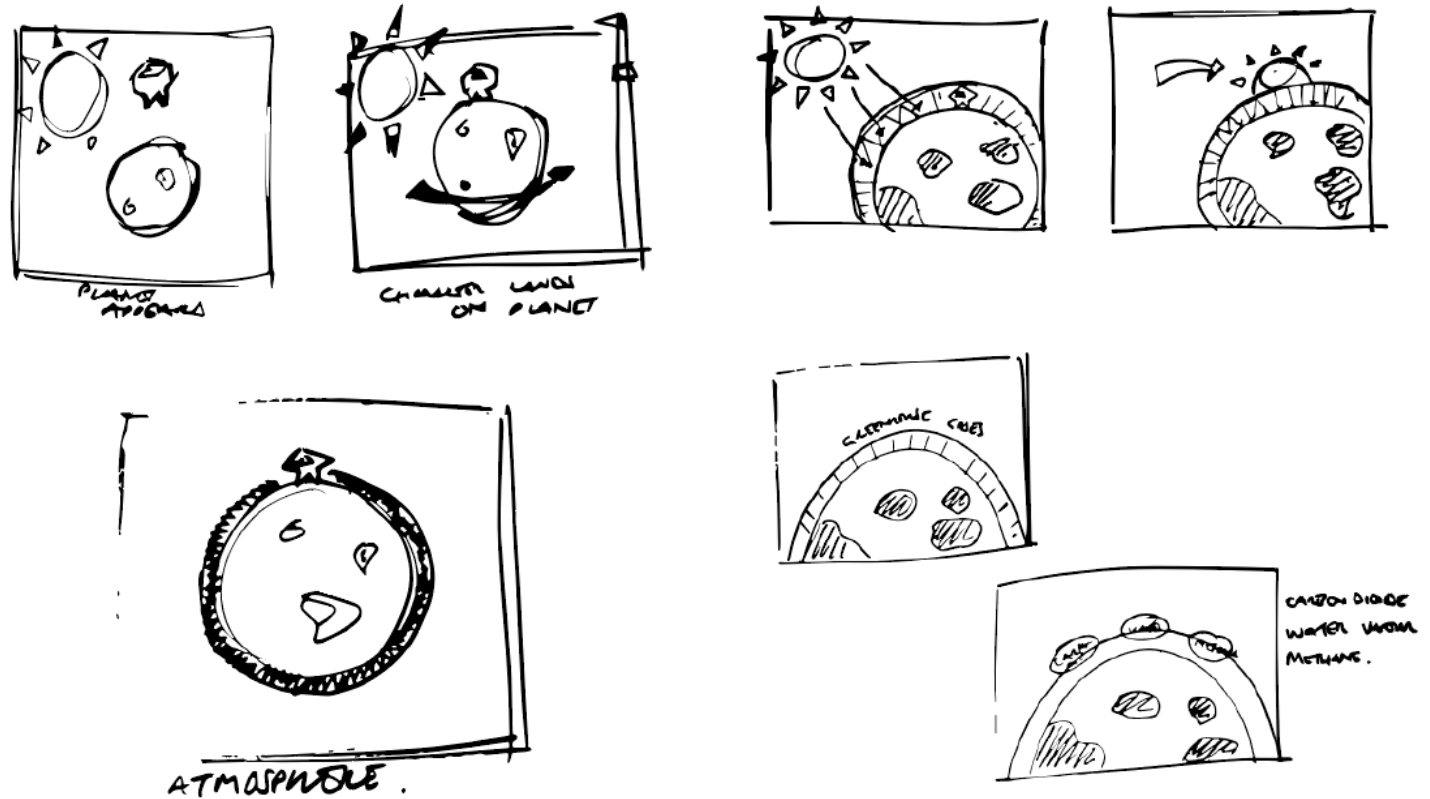
[15 Seconds] The extra greenhouse gases trap more heat, leading to Earth's capacity to retain solar radiation, resulting in the rising of the Earth's temperature - the same effect as in the greenhouse we saw earlier.

FRAMES
2525 - 2900

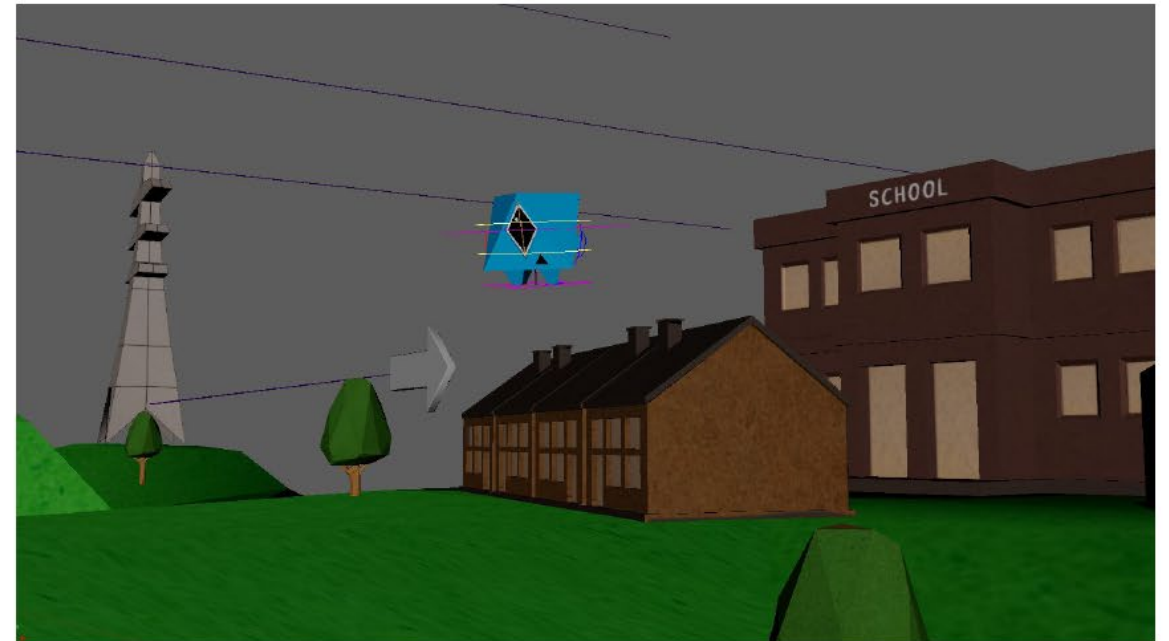
[13 Seconds] Satellite information is constantly measuring the gases in our atmosphere from space. This information can help scientists better understand how greenhouse gases are changing our climate.

FRAMES
2900 - 3225

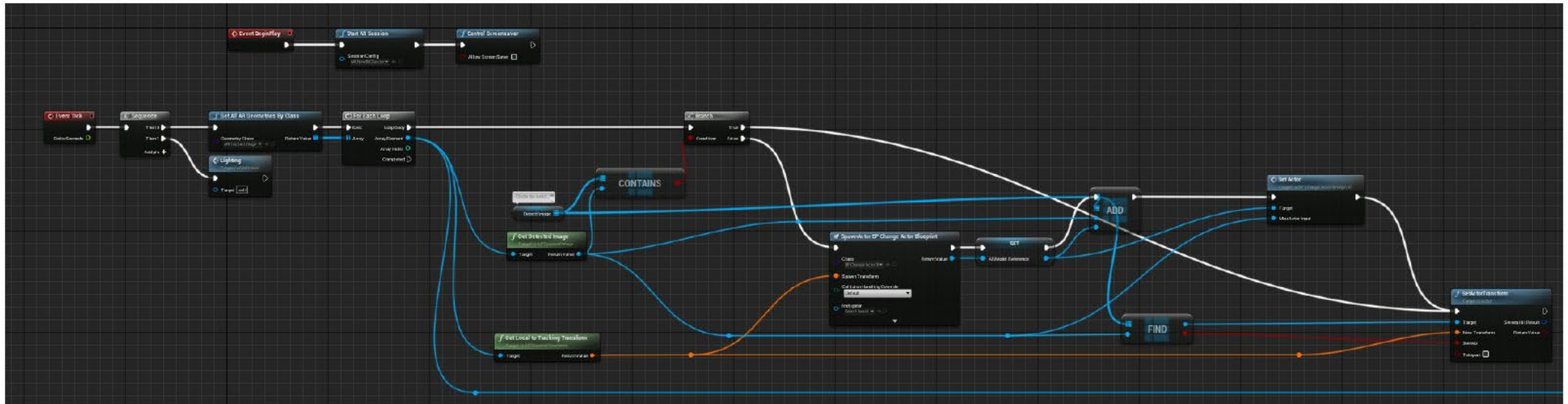
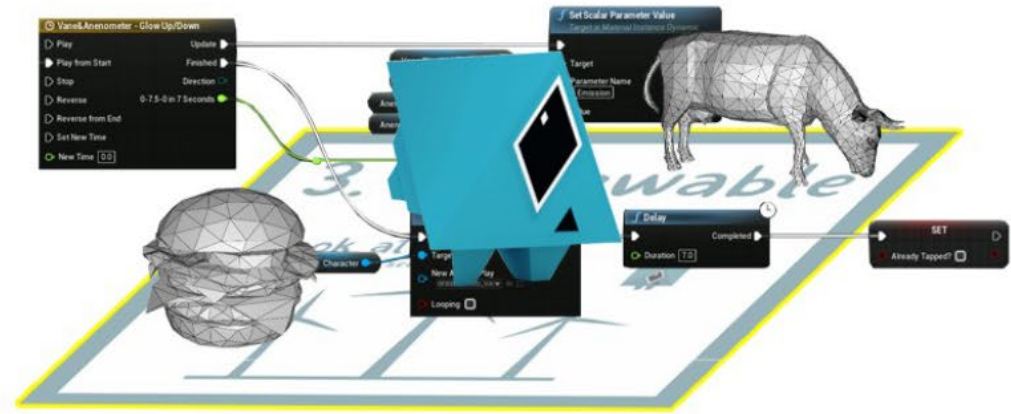
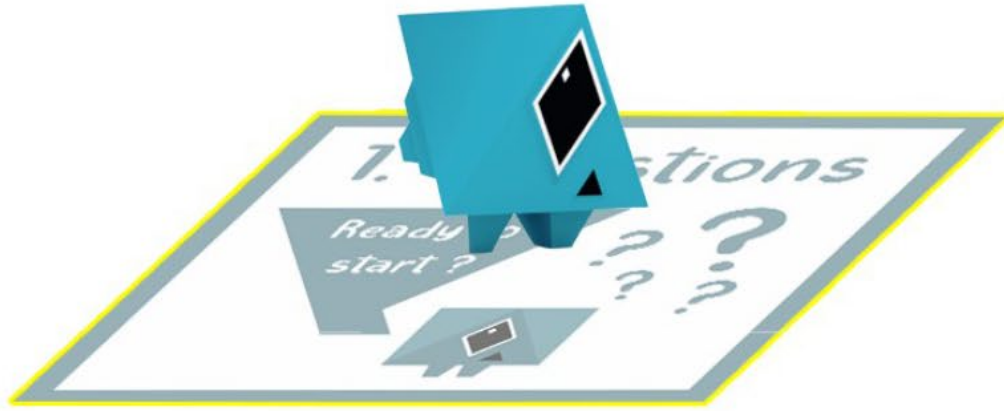
(Show satellite circling the planet)



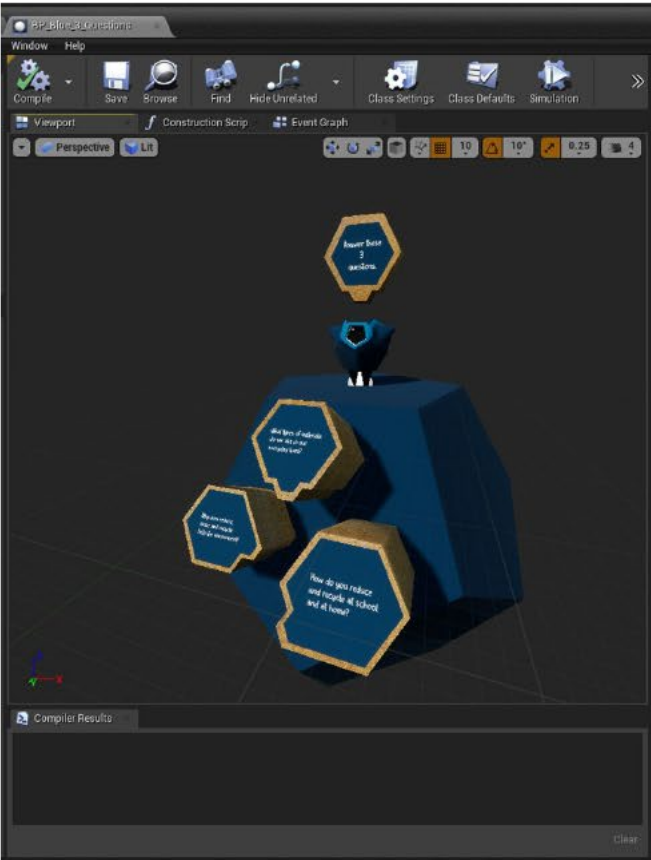
Creation:
3D Animation



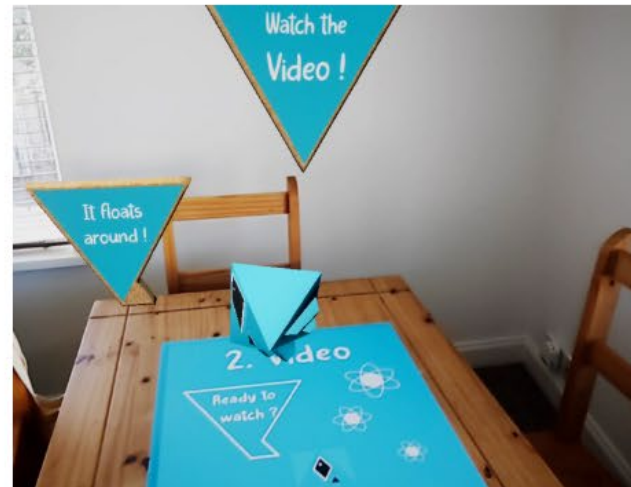
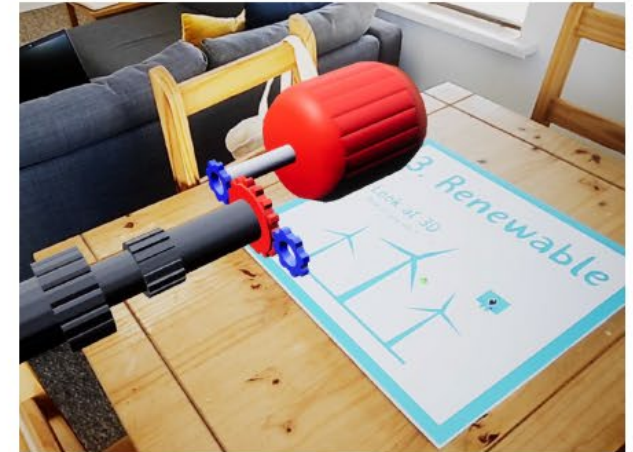
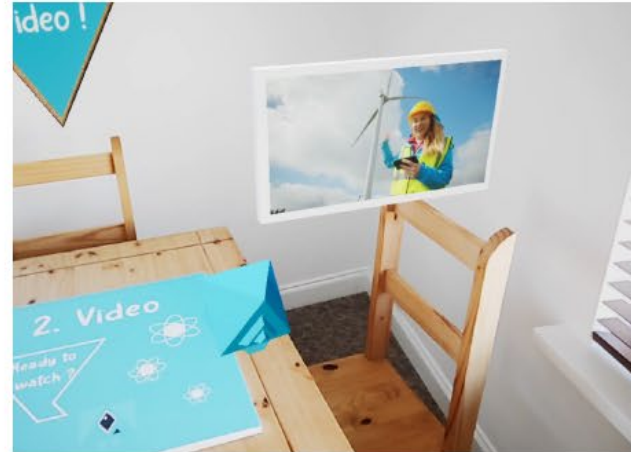
Creation: Mechanics (Blueprint)



Creation:
Mechanics (Augmentation)



Creation: Mechanics (Augmentation)



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Thank you.

Contact Details

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