STEM from Home Pack 13

Smart Cities!

This week, children will learn all about Smart Cities, build a virtual house with Blender and design a poster to encourage people to walk or cycle to work or school!

This week's Activity - What are Smart Cities?

What is a Smart City?

Smart cities use technology and insight to improve services and assets across the region such as transport, buildings and waste. They aim to reduce environmental impact and increase the quality of life for its citizens and visitors.

Here are just some of the technologies that Smart Cities use:

- **Internet of Things (IoT):** Here are just some of the technologies that Smart Cities use:
  Internet of Things (IoT): A network of connected devices such as vehicles, sensors or home appliances that can communicate and exchange data. This data is then stored in the cloud or on servers, allowing the understanding of behaviours and patterns, increasing efficiency and improving the experience of people in the region.

- **Cyber security:** For example, a firewall is a security system necessary for the protection, monitoring and control of all of the collected data. Firewalls ensure that the data is secure by preventing unauthorised access from hackers.

- **Artificial Intelligence (AI):** Artificial Intelligence allows computer systems to perform routine tasks that normally require human intelligence. This can include sight and speech, decision making and translating languages.

How do Smart Cities work?

Smart Cities use connected IoT devices and other technologies in order to improve council-led services and the experience of its businesses, education providers, citizens and visitors. Successful Smart Cities may follow four steps:

1. **Collection** – Technology such as smart sensors around the city will gather data in real time, day and night.
2. **Analysis** - Data collected by the smart sensors is then studied in order for the city to understand the behaviours and needs of its residents.
3. **Communication** - The insights that have been collected from the data are then communicated with organisations such as councils.
4. **Action** – The city will then use the insights from the data to create solutions and improve operations.

Why do we need Smart Cities?

The aim of a Smart City is to provide efficient and high quality council-led services and improve the experience of its citizens. As populations of cities grow, cities have to adapt to accommodate increasing populations by making more efficient use of their money and services.

These improvements can help both the city and its residents to improve and support future economic growth. Often the improvements are designed to reduce the city's environmental impact.

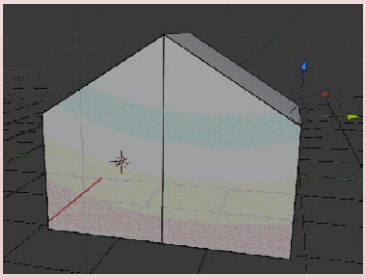
Now it's over to you to further research Smart Cities

What are the advantages of Smart Cities?
Are there any disadvantages of Smart Cities?
Are there any Smart Cities that already exist?

This Week's Technical Activity – Block House!

Introduction

Learn how to edit objects and extrude in Blender by creating a simple house from a single block **Access this activity**.



What you will need

A desktop or laptop computer capable of running the **Blender** software.

What you will learn

In this activity, you will learn how to design basic 2D and 3D assets.

This Week's Bonus Activity – Design a Poster to Encourage People to Walk or Cycle to Work or School!

Car emissions are one of the biggest issues that cities face when trying to become more environmentally-friendly.

In an attempt to combat this, Smart Cities want to encourage people to walk or cycle to school or work in order to make the city as clean and safe as possible for the people that live there.

However, we need your help! Your task is to create a poster to encourage people to walk or cycle to work or school, instead of driving.

You could list the benefits to the city and to the individual such as cost savings, environmental impact and the health benefits!

Your poster can be created digitally using Raspberry Pi's HTML/CSS '**Wanted**' activity or hand drawn, it's up to you!

For more information or additional support with STEM activities when working remotely, contact **enquiry.uk@cgi.com**

Thank you for reading this note. We hope your children enjoy our STEM at Home Programme.