Year 11 - Get Ready for Year 12 Information Technology



**Year 11 Transition work- Information Technology**

**Project 1 - Computer Systems (Hardware)**

**Independent Research - Using Cornell Notes**

1. Input Devices - Explain what they do

* Keyboard
* Mouse
* Scanner
* Sensors
* Microphone
* Graphics Tablet
* Visual Display Unit (VDU) or Screen
* Barcode reader

2. Output Devices- Explain what they do

* Plotters
* Speakers and headphones
* Braille terminal

3. Communication Devices

* Modem
* Network Interface Card
* Terminal Adapter
* Wireless Router
* Wireless Network Card
* Hub

4. Computer Components

* Processors (CPU)
* Control Unit
* ALU
* Motherboard
* Computers storage (Registers, Random Access Memor, Read Only Memory)

5. Storage (what is it? Strengths and Weaknesses)

* Flash Drives
* Cloud Storage
* Solid State Discs
* Optical Hard Drives

6. Computer Ports

* USB
* Fire wire
* SATA
* Network Ports
* Ethernet ports

7. Types of computer system

* Desktop systems/servers
* Tablet/hybrid
* Smartphones
* Embedded system/internet of things

**TASK: Identify three examples of embedded computer systems within the home and explain the advantages and disadvantages**

**Project 2 - Computer Systems**

Furture Learn Course- **Starts 4th May**

This course looks at how components of a computer system interact with each other.

**Resource:** <https://www.futurelearn.com/courses/computer-systems>

**Project 3 - Internet of Everything**

Open learning course

This course looks at the following things:

* explain the impact of the internet of everything (IoE)
* explain the interactions between people, process, data, and things that form the IoE
* configure networked devices and applications to support a given IoE implementation.
* explain the benefits and challenges of the IoE
* explain modelling and prototyping in the IoE.

**Resource:**<https://www.open.edu/openlearn/science-maths-technology/internet-everything/content-section-overview?active-tab=description-tab>

**Project 4 - Virtual and Augmented Reality**

1. **Research** the definitions of virtual reality and augmented reality

2. Pioneers of virtual and augmented reality

* Douglas Englebert
* Ivan Sutherland
* Tom Caudell and David Mizell

**TASK: Explain their motivations, impact and legacy to the field of virtual and augmented reality of each of the pioneers.**

3. Uses of Virtual and Augmented Reality- **(Independent Research)**

* US Military Nuclear Defence System
* Pilot Training
* The Mattel ‘data glove’
* Personal Guidance for visually impaired
* Chameleon

4. Areas of Use - **(Independent Research)**

* Architecture
* Business
* Education
* Entertainment, Leisure and the media
* Healthcare and Surgery
* Military
* Sport
*

5. Possible Impacts - **(Independent Research)**

* Visualisation of design
* Simulations
* Training
* Demonstrations of concepts
* Virtual Tours

**Task:**

1. Compare virtual and augmented reality
2. Name two pioneers who first coined the term ‘augmented reality.’
3. What are the two uses of virtual reality in:
	1. Education
	2. Military
4. Identify two uses of augmented reality for each of the following areas:
	1. Healthcare
	2. Sport
5. Explain two possible environmental impacts of virtual reality.

**Project 5 - Developing a Smarter Planet**

**Independent Research**

1. Understand what is meant by a smarter planet - improvements to original developments
* Radio to DAB (<https://www.ebuyer.com/blog/2015/05/when-will-dab-replace-fm/>)
* Telephones to mobile
* Manual to automated machinery
* Greener IT

<https://www.ibm.com/ibm/history/ibm100/us/en/icons/smarterplanet/>

**TASK: investigate the evolution of analogue radio to DAB.**

2. Importance of a smarter planet

* Speed proceese
* Improve efficiency
* Reduce waste and inefficiency
* Harness natural resources

Human Factors:

* Reduce manpower requirements
* Improve quality of life.

Impacts:

* Environment
	+ Pollution
	+ Food miles
	+ Increased energy consumption
* Ethical
	+ Health and transplants
	+ The internet
	+ Data privacy
* Social
	+ Acceptance
	+ Communication
	+ Exposure to threat
	+ Reduced face-to-face communication

**TASK: Compare the reasons for and against a smarter planet, (two paragraphs minimum).**

**<https://www.ibm.com/ibm/history/ibm100/us/en/icons/smarterplanet/impacts/> - A helpful link**

3. The impact of a Smarter Planet on individuals and how this influences lifestyles

* Individual
	+ Health
	+ Labour saving
	+ Time saving
	+ Flexibility
	+ Accessibility
* Lifestyles
	+ Health
	+ Comfort
	+ Travel
	+ Communication
	+ Social

**TASK: Consider the impact of a Smarter Planet on individuals and how this influences lifestyles. You will then using the information above consider the positive and negative impacts of a Smarter Planet on the environment, ethics and social interaction.**

**<https://www.ibm.com/ibm/green/> - A helpful link**