National Curriculum Reference

Design & Technology

Key Stage 3

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the programme of study.

Pupils should be taught to	At Culcheth High School, this is taught
▪ use research and exploration, such as the study of different cultures, to identify and understand user needs	In year 8 in the “Clock” project. In year 9 in the Amplifier” project
▪ identify and solve their own design problems and understand how to reformulate problems given to them	In year 7 “Vegetable super hero” project In year 8 “Sensor and Clock” projects In year 9 “Amplifier and Automaton” projects
▪ develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations	In year 8 “Sensor and Clock” projects In year 9 “Amplifier and Automaton” projects
▪ use a variety of approaches [for example, biomimicry and user-centred design], to generate creative ideas and avoid stereotypical responses	In year 7 “Vegetable super hero” project In year 8 “Sensor and Clock” projects In year 9 “Amplifier and Automaton” projects
▪ develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools	In year 7 “Vegetable super hero” project In year 8 “Sensor and Clock” projects In year 9 “Amplifier and Automaton” projects
▪ select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture	In year 7 “Vegetable super hero, Snake and Coat Hook” project In year 8 “Sensor and Clock” projects

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	In year 9 “Amplifier and Automaton” projects
▪ select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties	In year 8 “Sensor and Clock” projects In year 9 “Amplifier and Automaton” projects
▪ analyse the work of past and present professionals and others to develop and broaden their understanding	In year 8 “Clock” project In year 9 “Amplifier and Automaton” projects
▪ investigate new and emerging technologies	In year 8 “Sensor” project In year 9 “Amplifier and Automaton” projects
▪ test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups	In year 8 “Sensor and Clock” projects In year 9 “Amplifier and Automaton” projects
▪ understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists	In year 9 “Amplifier and Automaton” projects
▪ understand and use the properties of materials and the performance of structural elements to achieve functioning solutions	In year 7 “Vegetable super hero, Snake and Coat Hook” project In year 8 “Sensor and Clock” projects In year 9 “Amplifier and Automaton” projects
▪ understand how more advanced mechanical systems used in their products enable changes in movement and force	In year 9 “Automaton” project
▪ understand how more advanced electrical and electronic systems can be powered and used in their products [for example, circuits with heat, light, sound and movement as inputs and outputs]	In year 8 “Sensor” project In year 9 “Amplifier” project

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▪ apply computing and use electronics to embed intelligence in products that respond to inputs [for example, sensors], and control outputs [for example, actuators], using programmable components [for example, microcontrollers].	In year 8 “Sensor” project In year 9 “Amplifier” project The use of microcontrollers is being delivered in ICT