

## Scheme of Learning: Year 10 Design & Technology

### Topic Sequence: Year 10 Design & Technology

1	2	3	4	5
Polymers and electronics - Alessi inspired key fob light	Paper based materials – phone stand	Group Design & Make – Solar powered mechanical toy	Smart and Modern Materials	Mini NEA Project – Moisture Sensor

### Topic Overview:

This project develops on the foundation skills and knowledge developed through the Key Stage 3 curriculum. Taking the knowledge of materials and manufacturing skill and applying to a smaller, more complex project. Students work with simple electronics, CAD and CAM and learn how polymer based materials can be joined. Students also begin to take ownership of the creative direction of their projects.

Throughout project, there are opportunities to explore and embed related knowledge around CAD and CAM, new and emerging technology and embedding intelligence into products. Students are also introduced to the key designers, explicitly named in the GCSE specification.

Throughout the Year 10 project-based curriculum, students develop their understanding of the design process, to support them in developing the independence required for the “non exam assessment” (NEA), completed in Year 11.

### Lesson Sequence:

The sequence of lessons for this project, is driven by the “design process” involved in the design and manufacture of products. Broadly, this can be described using the stages below – those in bold are covered through this topic/project. The stages for most design and manufacture projects would follow a similar chronology. For consistency throughout our Key Stage 4 curriculum, this is based upon the assessment objectives referred to in the “non exam assessment” in Year 11.

Exploring CAD and CAM in terms of the benefits to designers and a broader understanding of the pros and cons is essential, so that students can choose when to use and when a different approach may be more suitable. Embedding intelligence into products has developed rapidly recently and students must understand how this has been achieved and the pros and cons. Introducing the “Key designers” gives students a foundation from which to explore their own influences throughout Year 10. This broadens their understanding of “design beyond the classroom” and encourages them to consider their preferences and interests.

Identifying opportunities

#### Relevant research

#### User wants/needs and analysis

Considered range of design problems

Design brief

#### Design specification

#### Use of design strategies and iterative design

Social Moral Economic Factors

Testing to develop designs

#### Fully developed design proposal

#### Communication techniques

Planning for manufacture

#### Worked with materials and components

#### Produce a high quality prototype

#### Understanding of materials

#### Using tools/techniques/processes/equipment

#### Evaluation and testing of ideas

#### Evaluation and testing of prototype

Further development

### Sequence of Lessons:

<b>1</b>	Project launch and Mind mapping
<b>2</b>	Mood board generation
<b>3</b>	CAD and CAM
<b>4</b>	New and emerging technology
<b>5</b>	Embedding intelligence
<b>6</b>	IT based research - Polymers
<b>7</b>	Meeting consumer needs
<b>8</b>	Design Specification
<b>9</b>	Key Designers Research
<b>10</b>	Initial Design Strategies
<b>11</b>	Idea simplification/Development
<b>12</b>	Feedback and further development
<b>13</b>	Final Design Presentation – Sketchup for Web
<b>14</b>	2D Design – Basic Controls and Approach
<b>15</b>	2D Design – Complete Laser cutting file
<b>16</b>	Laser cutting
<b>17</b>	2D Design Summary and Evaluation
<b>18</b>	Final Assembly
<b>19</b>	Final evaluation of process and product

### Topic Resources:

<b>Knowledge Map:</b>	Y10 Autumn Term	<b>Prescribed Sources:</b>	SENECA Learning
-----------------------	-----------------	----------------------------	-----------------

### Assessment:

<b>Knowledge:</b>	Autumn Term Forms Based Assessment
<b>Application of Knowledge:</b>	Key Skills Assessment (Sketchup Modelling, 2D Design Laser Cutting File, Assembly of Light: Function, Finishing of Light: Aesthetics)

### Supportive Reading:

<b>Technology Student</b>	technologystudent.com
<b>Focus Education</b>	Via the Design & Technology Curriculum Zone on the school website.