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 topic is very short and concise, with the intention of delivering the knowledge of Smart and modern materials. While there is the opportunity to apply this knowledge in a "design task", there is no "manufacturing" associated with this learning.
Students must have an understanding of the properties and application of this group of highly specialised materials.
Where possible, students gain hands on experience through handling materials and teacher led demonstrations.

Unlike all other aspects of the Year 10 curriculum, there is no structured design & make aspect to this short topic.

Lesson Sequence:

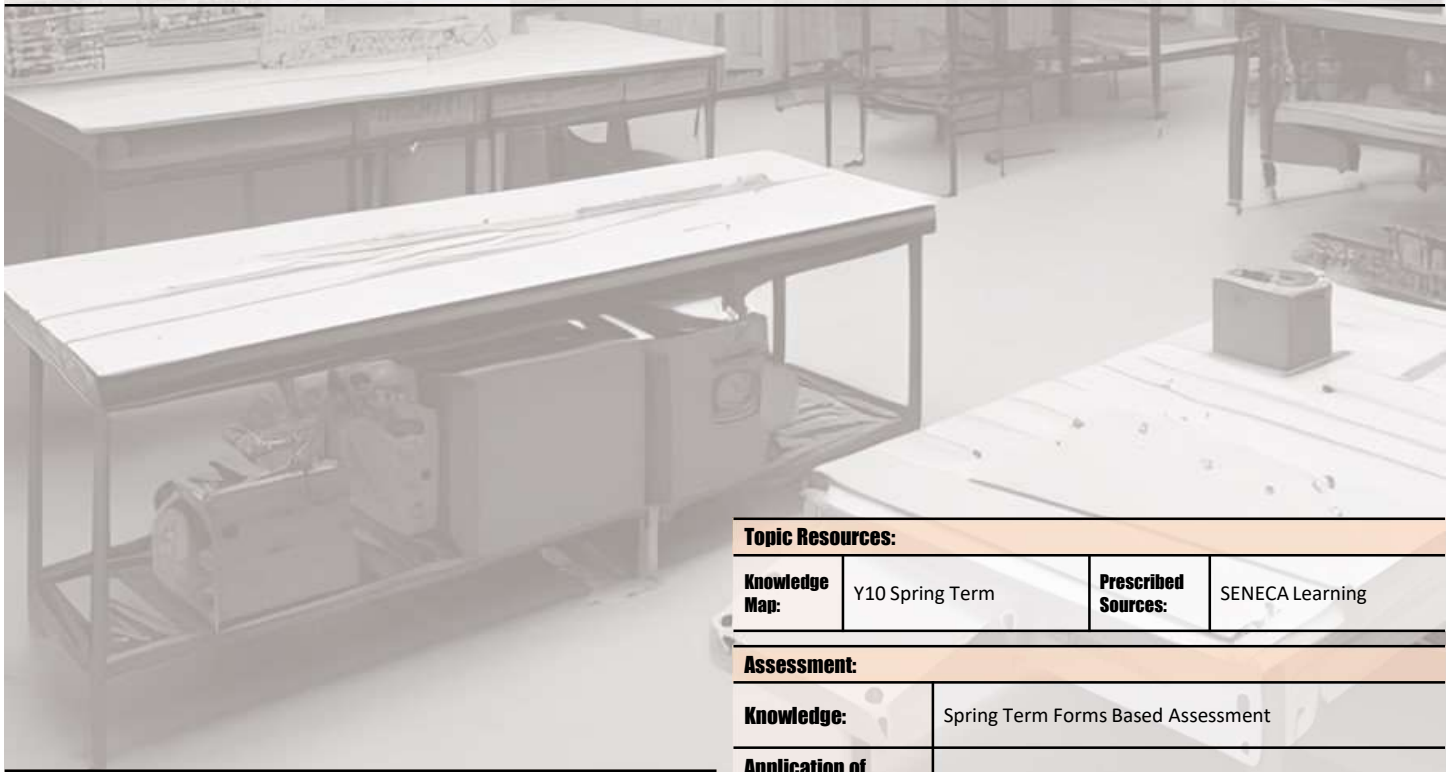
Starting with the most common stimuli for smart materials, developing an understanding the temporary nature of the changes that occur with smart materials.

Students begin to build understanding of specific material examples (SMA/Nitinol and Polymorph) – with demonstrations of both and hands on activities to develop tangible experience of the materials.

Students are next introduced to "technical textiles", all of which have ben designed to offer certain properties. There are a large number of these, of which, students should have a basic understanding. Learning about common applications makes sense of the specific properties that can be exploited by designers, to make products which perform better.

Composites and high performance materials are a category that students would rarely have the chance to use within their own designs, but offer essential knowledge. Understanding the forces/stresses some products are subjected to, clarifies the need for this extraordinary group of materials.

Finally, students are tasked with creating a custom chair concept, that incorporates this group of materials. Students are expected to exploit the materials' unique properties to make interesting and innovative designs.



Sequence of Lessons:

1	Smart Materials – Stimuli and Sample exploration
2	SMA and Nitinol
3	Design Problems/Technical Textiles knowledge
4	Composites and High performance materials
5	Smart and modern materials design task

Topic Resources:

Knowledge Map:	Y10 Spring Term	**Prescribed Sources:**	SENECA Learning

Assessment:

Knowledge:	Spring Term Forms Based Assessment
Application of Knowledge:	Short design task

Supportive Reading:

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