

Threshold Concept

- To recognise there are different types of forces and these can effect the way a structure is designed to prevent failure.
- Materials are chosen for their physical and mechanical properties.
- How successful a structure is depends on how it is designed, constructed and used.

There are 4 types of structure:

Man made }
Natural } Any structure can be described using a combination of these
Frame }
Shell }

A Natural Frame Structure A manmade Shell Structure A Natural Shell Structure A Manmade Frame Structure

All Structure do the following things:

- They Support something (Like a Pillar)
- They Span a Distance (Like a bridge)
- They Enclose a space (like a house)
- They Protect something (Like a car)

Using this information can you?

- Define what a structure is
- Name the different types of structure

You should be able to use this knowledge to describe any structure. Eg A house is a manmade shell structure to protect people from the weather or a Tree is a natural frame structure to support leaves.

External forces are those that act on a structure to try and make it move. There are three basic forces Push, Pull and Twist. It can be hard to see forces acting on something but you can see the affect

When the forces that push, pull or twist act on structure they can force that structure to change or undergo stress we use more technical language than just push, pull etc. We use language that refers to the effect (the internal forces) rather than the action

compression tension bending torsion shear

A bridge is a Manmade, frame structure that spans a distance. There are many different types of bridge that all work in different ways

Understanding how forces act on a structure let us design bridges that can support a great deal of weight.

The parts in tension will have to be able to resist being stretched and those in compression will have to resist being squashed.

Material Properties

Each material has properties that make them good for specific tasks, eg cotton is **lightweight** and **absorbent**. The properties of materials must be considered when designing a product, eg a steel pan handle would **conduct** too much heat and burn the user, whereas beech would be more appropriate as it is **tough** but a poor **conductor** of heat

These are some examples of material properties you would need to know

Conductivity.	Elasticity
Corrosion Resistance.	Toughness.
Density.	Hardness.
Ductility / Malleability.	Plasticity

Threshold Concept:

Different food costs different amounts.



All around the world, people choose to eat different food for many different reasons. One very important factor for most people is the cost of the food. There are ways we can cut down on food bills:

- ✓ If the food has been grown or reared locally, travelling and storage costs are reduced
- ✓ Check the price difference between value brands and premium products.
- ✓ Check out the price per 100g or per 100ml when choosing food
- ✓ Check the frozen and canned vegetable section and buy items that are cheaper so you always have a variety in the freezer and the cupboard.
- ✓ Bulk buy meat and fish and freeze in smaller portions until you are ready to use them. Take time to plan your meals and then compile a shopping list of everything you need.
- ✓ Using leftovers is a great way to save money and reduce food waste.



The way food is prepared and made, along with customs, and the use of local and seasonal ingredients, often combine to create dishes unique to a particular region. Understanding about global cuisine not only allows us to enjoy a huge range of styles and flavours, but also encourages dialogue around culture and inclusivity.

Threshold Concept:

Food is produced all around the world and that different countries and cultures eat different foods



Threshold Concept:

Allergies to food and food intolerances can cause a person to become unwell and that all prepacked food requires a food label that displays certain mandatory information.

Most people can eat food, without any problems, although they may have different likes or dislikes that influence what they choose. However, some people react to certain food and eating them may cause uncomfortable symptoms or, in rare cases, a severe illness. Food intolerance is the general term used to describe a range of adverse responses to food, including allergic reactions, adverse reactions resulting from enzyme deficiencies, pharmacological reactions and other non-defined responses. Allergy sufferers are protected by Natasha's Law, requiring food businesses to include full ingredients labelling on pre-packed for direct sale foods. This information helps people that have food allergies, intolerances or dietary needs to make safe and informed choices when they are choosing food items.

Threshold Concept:

Wasting food has environmental and economic



Every year in the UK, seven to ten million tons of food are wasted. It is thought that approximately 50% of the food wasted is still edible. The cost of food waste is significant – estimates show that it costs an average family £700 per year. Reducing the amount of food consumers waste not only has financial benefits but also environmental benefits. There are many ways in which consumers can help reduce food waste when buying food, cooking and storing food.

Threshold Concept:

There is a dependent relationship between diet, nutrition and health.



Poor diet is now the biggest risk factor for preventable ill health in England. A healthy diet helps children grow and develop properly and reduces their risk of chronic diseases. Adults who eat a healthy diet live longer and have a lower risk of obesity, heart disease, type 2 diabetes, and certain cancers. as well as affecting our physical health, what we eat may also affect the way we feel. Improving your diet may help to: improve your mood, give you more energy and help you think more clearly.

