Allanson Street Primary School – Medium Term Plan

Year group:	2 (Summer 1)	Subject:	Design Technology	Unit:	Structures

National Curriculum Objectives

I will learn to:

Design
- Explain what they want to do
- Follow a simple design criteria
- Use knowledge of existing products to help come up with ideas
- Develop ideas by talking and drawing
- Model ideas by exploring materials

Make

Make a structure with different materials
Cut materials using scissors
Join materials together with adhesive materials
Choose appropriate joining techniques
Explore how structures can be made stronger, stiffer and more stable

Evaluate

Does the product meet the design criteria?
Recognise what has worked well.
Recognise what could be improved.

Concepts

Climate

Legacy

Equality

Sustainability

Identity

Common Misconceptions

Some children may think:

Glue will make everything stick together easily. Structures have to be big. Joining cardboard together can only be done with Sellotape or glue.

Prior Learning

Nur	- Explore structures in their environment - Build basic structures out of blocks		
Rec	- Build more complex structures out of blocks/Lego - Create basic structures using junk modelling techniques - Use glue and Sellotape to join materials		
Y1	- Explore and use mechanisms in their products (wheels/axels/sliders/levers) - Join materials together as part of a moving product - Follow simple safety rules	- Think of some ideas of their own - Explain what they want to do - Follow a simple design criteria - Say how the product will be useful to the user - Use knowledge of existing products to help come up with ideas - Say how their product will work	Talk about their own work and things that other people have done Does the product meet the design criteria? Recognise what has worked well. Recognise what could be improved.

Future Learning			
Y3	Measure and cut out using cm - Choose tools and equipment that are appropriate for the job - Assembling components together before joining - Use folding and scoring for precision - Reinforce shell structures to make them stronger - Make the finished product neat and tidy	- Explain how the product will be useful to the user - Create and follow their design criteria - Choose the appropriate tools and materials and explain why - Explain how particular parts of their products work - Make design decisions based on the availability of resources	Does the product meet the design criteria? Does the product meet it's intended purpose? Recognise what has worked well. Recognise what could be improved. Assess how well the product works
Y4	- Use a range of components (levers and linkages) - Understand how levers and linkages all work together - Cut materials safely using scissors/craft knife - Know that linkages are made by connecting together levers. - use a variety of fastenings to create levers and linkages	- Explain how the product will be useful to the user - Create and follow their design criteria - Choose the appropriate tools and materials and explain why - Explain how particular parts of their products work - Make design decisions based on the availability of resources	Does the product meet the design criteria? Does the product meet it's intended purpose? Assess how well the product works Willing to make changes if this helps them to improve their work
Y5	Accurately assemble, join and combine materials and components - Able to reinforce and strengthen a frame structure - Measure, mark out, cut and shape materials with some accuracy	- Develop a simple design specification to guide their thinking - Indicate the design features of their products that will appeal to the user - Explain how particular parts of their products work - Carry out research on existing products to inform their own design decisions - Make design decisions taking into account the restraints of time and resources	Evaluate their product against their design specification Does the product meet it's intended purpose? Willing to make changes if this helps them to improve their work Consider the views of others to improve their work. Identify strengths of their product - Assess areas the product could be improved
Y6	Accurately assemble, join and combine materials and components - Accurately measure, mark out, cut and shape materials - Use mechanical systems such as cams or pulleys or gears create movement - Accurately apply a range of finishing techniques	- Develop a simple design specification to guide their thinking - Indicate the design features of their products that will appeal to the user - Explain how particular parts of their products work - Carry out research on existing products to inform their own design decisions - - Make design decisions taking into account the restraints of time and resources	Evaluate their product against their design specification How well the product has been made Does the product meet it's intended purpose? Assess how well the product works Willing to make changes if this helps them to improve their work Consider the views of others to improve their work. Refine the quality of the finished product including making annotations on the design - Demonstrate that their product is fit for purpose.
KS3	select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture select from and use a wider, more complex range of materials, components and - ingredients, taking into account their properties	- use research and exploration, such as the study of different cultures, to identify and understand user needs - identify and solve their own design problems and understand how to reformulate problems given to them - develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations - use a variety of approaches [for example, biomimicry and user-centred design], to generate creative ideas and avoid stereotypical responses - develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools	- analyse the work of past and present professionals and others to develop and broaden - their understanding - investigate new and emerging technologies - test, evaluate and refine their ideas and products against a specification, taking into - account the views of intended users and other interested groups - understand developments in design and technology, its impact on individuals, society - and the environment, and the responsibilities of designers, engineers and technologists

Learning Objectives	Learning Sequence	Sticky knowledge / core skills & vocab.	End points & Assessment
I know how to use knowledge of existing products to help me come up with ideas **I know how to create a simple design criteria in a group**	**Prior Learning:** Networking activity – questions from previous skills taught in DT during year 2. **New Learning:** Introduce our new design brief – To make a special toy room for the Faraway Tree. TTYP – from our design brief can you state the product? Purpose? User? Product – toy Purpose – to be played with User – Children Now that we know our key ideas for our DT project this term, we need to start thinking of one of the most important aspects of creating any new product. TTYP – can you remember what we have done at the beginning of each DT project this year? (Product research) We need to look at some existing products and see if they can help us come up with ideas. Explain that there are lots of different already existing STRUCTURES that exist for toy houses in the world. When we are conducting market research, we need to be really clear on what we are looking for. - Children to look at the different examples of toy dollhouse/structures on their tables. - Discuss how each one has slightly different features – what moves on it, how are you able to play with it, how is it made. - Children to choose their three favourite toys to record into their DT books – they need to stick the picture in and to label	**Structure** A building or other object constructed from several parts	Children can pick out key elements from existing designs and explain how they could be useful in their own product.

	the features they like about the toy, what material it is made from, how they are able to access it to play with. - **Reflection:** Discuss how even though the end product might end up looking differently for each of us the overall product, purpose and user will be the same to meet the design brief. Therefore, it is really important that we have our design criteria in the front of our minds at all times when designing and making our products. TTYP – what do we need to make sure all our toy room structures are? (safe, appropriate size for children, fun to play with, secure structure) **Record design criteria into books (chn can copy from working wall)**		
I know how to model ideas by exploring materials I know how structures can be made stronger, stiffer and more stable	**Prior Learning:** TTYP – product? Purpose? User? **New Learning:** Explain that now we have an idea of what already exists on the market for toy structures we need to make sure we have the correct skills in order to make our product successfully. TTYP – what is a structure? **Structure** A building or other object constructed from several parts Explain that we can make structures out of all kinds of materials for all different purposes. What is our product's purpose? Discuss aspirational person – Zaha Hadid and how she designed world famous structures as an architect. Before we can make our own product, we need to know how to make a structure by using different joining techniques. We also	• The L-Brace technique can be used to make something stronger and stiffer when joined. • There are a range of joining techniques used to make structures. • The slot technique is used to join two flat pieces of cardboard together. • Using joining techniques and adhesive materials together will make a stronger more stable structure. **Joining technique**	Children can recall the slot and L-Brace technique and how they are used. Children can recreate the joining techniques.

	need to know how to make it stronger, stiffer and more stable to ensure we meet our design brief of keeping the children safe! Children to look at cardboard boxes that have already been made – can you see how the sides are joined together? How do you think they have been joined? Discuss joining techniques and the use of adhesive *(Knowledge organiser)* Go through power point section showing how we can make different joins. (Slot, L-Brace and Tabs) - Children to explore making the different joins using scraps of carboard. (Small version so we can attach inside DT book in an envelope or by sticking in) - Discuss which ones do we think would be best to make something strong? Stable? – write sentence into book using handwriting line page **Reflection:** Which joins do you think you will use in your product? Why?	A way for two or more materials to be joined together **Stable** An object or structure that is not likely to be knocked over – it is firmly fixed in place **Structure** A building or other object constructed from several parts	
- I know how to explain what they want to do - I know how to develop ideas by talking and drawing I know how to choose appropriate joining techniques	**Prior Learning:** True or false different join techniques quiz **New Learning:** Show the children the image of the wall that is structurally sound and the one that isn't – can they guess which is more stable? Why do they think so? Children to make both walls out of blocks on their tables (in groups) – take a block away at the bottom – what happens? Why? (take pictures for DT books – discuss why the interlocking brick wall is stronger)	• The L-Brace technique can be used to make something stronger and stiffer when joined. • There are a range of joining techniques used to make structures. • The slot technique is used to join two flat pieces of cardboard together. • Using joining techniques and adhesive materials together will make a	Children can choose appropriate joining techniques in their plans. Children can create their own design and talk about the key points.

	Explain that now we have completed our product research and gathered a range of ideas for what products already exist in the world – and we have improved our technical knowledge by looking at different types of join techniques we can now come up with a plan for your own toy structure. **GO to IT SUITE** **TTYP – what were the key points from our design brief?** Show the children how we can plan a toy structure step by step. - Need to start with the main structural point (you cannot think about anything else before you know what the main shape of your room will be – how many walls? Where will it open? - Need to think about materials and which joining techniques you are going to use in order to create each section. - Once main structure designed – think about are you going to have levels? sections? any additions like the roof? Windows? Doors? Children to design their structure using IT – 2simple – use shape tools and the lines tool to create their structure shape - Print and label **Reflection:** Children to discuss their plans with the other children on their table – explain how they are going to build it and how it will work.	stronger more stable structure. **Joining technique** A way for two or more materials to be joined together **Stable** An object or structure that is not likely to be knocked over – it is firmly fixed in place **Structure** A building or other object constructed from several parts	
I know how to make a structure with different materials I know how to cut materials using scissors	**Prior Learning:** Knowledge organiser partner quiz. Children to use the knowledge organiser's on their table and quiz their partner on a piece of sticky knowledge or vocabulary. **New Learning:** Explain that today we are moving onto the making part of our DT project. Remind the children that they spent lots of time focusing on their design's last week to make sure they have really thought through	• The L-Brace technique can be used to make something stronger and stiffer when joined. • There are a range of joining techniques used to make structures. • **Hold scissors by the blade when walking to be safe.**	Children can use scissors to cut materials safely Children can make structures stronger, stiffer and more stable using different joining techniques

I know how to join materials together with adhesive materials I know how to choose appropriate joining techniques I know how to explore how structures can be made stronger, stiffer and more stable	what materials they are going to use and what joining techniques they think will work best. Explain that before we begin our making process, we need to remind ourselves how to be safe when using scissors in the classroom. (Go through scissor safety: holding blade when walking, never pointing at anyone, always cut away, when cutting cardboard use the scissors in smaller snips) Today we are going to focus on making the main structure of our toy rooms. Put joining techniques on the board – remind them how these can make products stronger/stiffer/more secure but that we also need to have some adhesive materials in order to ensure that our structure is stuck together too. (PVA glue, different types of Sellotape) **EMPHASISE THAT THE ADHESIVE TECHNIQUES ARE EXTRA NOT HOW THEY WILL JOIN EVERYTHIGN** Children to work from their designs in order to make their own main room structure **Reflection:** See where they are up to on their design – anything not working well so far? Record on post it note in book to help with evaluation. **take pictures of structures so far at end of lesson**	• Different types of adhesive materials are needed for different parts of a structure. **Adhesive** a substance used for sticking objects or materials together	
I know how to make a structure with different materials I know how to cut materials using scissors	**Prior Learning:** **have pic of structure so far stuck into book with post it note underneath** Look at their post it note from previous lesson – what did they reflect that they had been finding difficult. How are you going to fix this moving forward with the making process today? – write underneath the image and post it note. **New Learning:**	• The flange joining technique is used to make something more stable • The L-Brace technique can be used to make something stronger and stiffer when joined.	Children can use adhesive materials to join materials together

I know how to join materials together with adhesive materials I know how to choose appropriate joining techniques I know how to explore how structures can be made stronger, stiffer and more stable	Explain today we are going to carry on with the making process of our toy room structures. We have made our main structure so far and thought carefully about how we can make it stronger/secure by using appropriate joining techniques and choosing the right adhesive materials. Now we need to move onto the next stages of our designs and add the extra details or and extra levels that you wanted to add to make your product appeal to your user. **Remind the children of the design criteria and how we must always keep this at the front of our minds with each stage of the making process.** Children to then finish making their toy room structures **pictures of making process** **pictures of final product** **Reflection:** Children to look at another child's finished tree house and compare to initial design brief – say one thing they think they did well. (Children record on post it note into their DT books.)	• There are a range of joining techniques used to make structures. • Hold scissors by the blade when walking to be safe. • Different types of adhesive materials are needed for different parts of a structure. **Structure** A building or other object constructed from several parts	
I know if the product met the design criteria *I know how to recognise what has worked well.* *I know how to recognise what could be improved.*	**Prior Learning:** TTYP – something you did well during making process TTYP – something you would change if making the product again **New Learning:** Now that we have finished our products we need to complete the final stage of the DT process and evaluate our products against our initial design brief. TTYP – Product? Purpose? User? TTYP – what was our design brief?	**Structure** A building or other object constructed from several parts **Joining technique** A way for two or more materials to be joined together Zaha Hadid was a famous architect who designed lots of amazing buildings. She created buildings like no one had ever seen before.	Children can recognise how their product can be improved and explain why they would do so.

	As we moved through the making process we all chose one thing we were finding a bit difficult and all received a compliment on something a perspective user thought we were doing well. Children to look at both post it notes in their DT books – do they agree? For the thing that they found difficult on the first making day – how did they go about correcting that on the second making day? Explain that for our product to be a success we need to have met all points on our design criteria, know what worked well during the making process and also recognise what could be improved if we were to make it again. Discuss inspirational architect Zaha Hadid and how she only became so skilled at designing and creating buildings by evaluating her projects in a similar way to what we are doing now! Children evaluate their product against design criteria in table. Children to answer two main evaluation questions – stating what worked well and WHY it worked well considering their p/p/u and design criteria. Then state what they could improve and how/why it needs to be improved. **Reflection:** Which joining technique did we find the most useful? Why do we think that is?