The Berkeley Academy Design and Technology Progression of Knowledge and Skills

			→ → → Progression of skills – Skills from previous year groups to still be covered					
	Nursery	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Designing							
Background research Understanding contexts, users and purposes.	**UNDERSTANDING OF THE WORLD** ○ Explore how things work.		○ Explore existing products. ○ Who is it for? ○ What is the product used for? ○ Where might you find the product?	○ Which materials are used? ○ How products work? ○ Express and opinion about the product.	○ Who made the product? ○ When was the product made? ○ Where was the product designed and made? ○ Evaluate the product: design and use and materials. ○ Understand and gather information about what a particular group of people want from a product.	○ Evaluate the product: design and use. ○ What methods of construction have been used? ○ How well does the product achieve its purpose? ○ Research famous inventors/ designers.	○ How environmentally friendly is the product? ○ How environmentally friendly are the resources? ○ Evaluate the product on appearance. ○ Identify the cost to make the product. ○ Gather information using questionnaires, interviews and surveys etc.	○ Identify if the product has any other purposes e.g. leading innovation of the time, tread setting. ○ How much does a product cost to make? Sell? Profit margin?
Generating, developing, modeling and communicating ideas.	Talking about problem solving Explain what they will do and why		○ Explain what product they will be designing and making. ○ Describe what their product are for. ○ Use a simple design criteria to help develop their ideas. ○ Amend simple templates to create model ideas.	○ Use own experiences and existing products to develop ideas. ○ Explain how their product will work. ○ Say who their product is for – themselves or others. ○ Communicate ideas by talking, drawing and computing (if appropriate). ○ Create templates/ pattern pieces.	○ Use annotated sketches, cross-sectional drawings and diagrams to develop and communicate their ideas. ○ Generate realistic ideas that meet needs of users. ○ Share and discuss ideas with others. ○ Represent ideas in diagrams, annotated sketches and computer based programme.	○ Develop their own design criteria and use for planning ideas. ○ Identify design features that will appeal to intended users. ○ Explain how parts of their product works – through annotation and discussion. ○ Consider the availability of resources and tools when making design decisions.	○ Share and clarify ideas through discussion. ○ Create a design description for their product.	○ Draw on research to generate innovative ideas. ○ Highlight the impact of time, resources and cost within their design ideas – make decisions based on these restrictions.

	Making							
Planning	**PERSONAL, SOCIAL AND EMOTIONAL DEVELOPMENT** ○ Select and use activities and resources, with help when needed. This helps them to achieve a goal they have chosen or one which is suggested to them. ○ Develop their own ideas and then decide which materials to use to expressthem.		○ Talk about what they need to do next. ○ Communicate ideas by talking and drawing. ○ Select from a range of tools. ○ Select from a range of materials.	○ Choose materials based on their properties. ○ Choose suitable tools for making – whilst explaining why they should be used.	○ Order the main stages of making. ○ Create pattern pieces and prototypes. ○ Explain reasons for material and tool choice – from a limited selection.	○ Explain reasons for material and tool choice – from a wider selection.	○ Record a step-by-step plan for making. ○ Produce lists for the tools, equipment, and materials they will be using. ○ Choose materials to use based on suitability of their properties and aesthetic qualities.	○ Record a step-by-step plan for making. ○ Produce lists for the tools, equipment, and materials they will be using. ○ Draw on research when selecting materials.
Making (2-3 lessons) Practical skills and techniques	**PHYSICAL DEVELOPMENT** Choose the right resources to carry out their own plan. Use one-handed tools and equipment, for example, making snips in paper with scissors. **EXPRESSIVE ARTS AND DESIGN** Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park. Explore different materials freely, in order to develop their ideas about how to use them and what to make. Develop their own ideas and then decide which materials to use to expressthem. Create closed shapes with continuous lines, and begin to use these shapes to represent objects.	**PHYSICAL DEVELOPMENT** Develop their small motor skills so that they can use a range of tools competently, safely and confidently. Including scissors, paintbrushes and cutlery. **EXPRESSIVE ARTS** Explore, use and refine a variety of artistic effects to express their ideas and feelings. Create collaboratively, sharing ideas, resources and skills Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	○ Use tools safely and/or hygienically. ○ Measure, mark, cut and shape materials and components. ○ Join, assemble, combine materials and components.	○ Use a range of materials and component s. ○ Use finishing techniques, including skills learnt in art.	○ Use design criteria whilst making. ○ Measure, mark, cut and shape materials *with some accuracy*. ○ Join, assemble, combine materials and components *with some accuracy*. ○ Use finishing techniques, including skills learnt in art *with some accuracy*.	○ Measure, mark, cut and shape materials *with increasing accuracy*. ○ Join, assemble, combine materials and components *with increasing accuracy*. ○ Use finishing techniques, including skills learnt in art *with increasing accuracy*.	○ Measure, mark, cut and shape materials *accurately*. ○ Join, assemble, combine materials and components *accurately.* ○ Demonstrate problem solving skills when encountering a mistake or problem. ○ Use finishing techniques, including skills learnt in art *accurately*.	○ Measure, mark, cut and shape materials with *skill, accuracy and flair.* ○ Join, assemble, combine materials and components with *skill, accuracy and flair.* ○ Demonstrate problem solving skills when encountering a mistake or problem. ○ Use finishing techniques, including skills learnt in art with *skill, accuracy and flair.*

	Evaluating						
Evaluation Referring to planning and initial ideas in evaluating their product.	**EXPRESSIVE ARTS** ○ Return to and build on their previous learning, refining ideas and developing their ability to represent them ○ Share their creations, explaining the process they have used	○ Talk about their design and what they have made. ○ Make simple judgements of how the product met their design ideas.	○ Suggest how their product could be improved.	○ Refer to their design criteria whilst they are designing and making. Use design criteria to evaluate product; identifying strengths and areas for development.	○ Consider the views of the user whilst evaluating.	○ Use design criteria to evaluate the end product. Look at the quality of the end product and design.	○ Evaluate whether the end product is fit for its intended purpose.

	Technical Knowledge, Skill Progression and Tool Use				
Structures	○ Begin to make structures other than towers such as enclosures for animals	○ Use a variety of construction toys to make a free standing structure ○ Test their ideas and adapt the design	○ Create freestanding structures. ○ How to make structures: - Stiffer - Stronger - More stable. ○ How to join using; - Glue - Tape - Glue gun (supervised) -Use a template.	○ Create shell or frame structures. ○ How to make structures: - Stiffer - Stronger (frames with diagonal struts) - More stable (wide base) ○ Measure, mark and cut to an accuracy of 1cm. ○ Use tools: - Junior Hacksaw	○ Create complex structures: - Stiffer - Reinforced ○ Join materials. ○ Use tools: - Bradawl (to mark hole positions). - Hand drill (to make tight and loose fit holes). ○ Create frameworks to support mechanisms. ○ How to make structures: - Stiffer - Stronger - More stable. ○ Measure, mark and cut, to an accuracy of 1mm.
Food	○ Understand how to hand wash ○ Talk about different foods ○ Role play making meals	○ Identify fruits ○ Recognise the importance of handwashing prior to touching food . ○ To identify likes and dislikes	○ Prepare ingredients: - Cut - Peel - Grate - Chop ○ Measure & weigh – non-statutory measures ○ Ingredients should be combined according to their sensory characteristics.	○ Follow recipes. ○ Join & combine a range of ingredients: - Slicing - Mixing - Spreading - Baking ○ Explore seasonality of fruit & vegetables. ○ Cook using a heat source: - Oven – with supervision	○ Join & combine a range of ingredients: - Kneading ○ Measure & weigh – Using scales. ○ Know how to prepare food products taking into account the properties of the ingredients. ○ Know that recipes can be adapted to change the appearance, taste, texture and aroma. ○ Know that a recipe can be adapted by adding or substituting one or more ingredients. ○ Cook using a heat source: - Oven – with some supervision set the temperature and monitor the time independently.

Mechanisms (KS1) / Mechanical & Electrical Systems (KS2)	○ Understand how tools work. ○ Understand what different joining materials are for such as tape/ glue ○ Experiment with moving parts	○ Use a range of tools safely and accurately ○ Join materials with support	○ Use appropriate tools: - Hole punch - Hacksaw and bench hook - Scissors ○ Join materials: Glue Tape ○ Know about the working/movement of: - Levers - Sliders - Wheels - Axels - Experiment with levers and sliders.	○ Use mechanical systems and know how they create movement: - Gears - Pulleys - Levers Linkages – make movements larger or more varied ○ Use electrical systems (to make a product functional): - Switches - Bulbs - Buzzers - ICT to control products	○ Use mechanical systems and know how they create movement: - Cams - Pulleys - Gears Use electrical systems (to make a product functional): - Motors ○ Use ICT systems (to make a product functional): - Programme, monitor and control using ICT. ○ Monitor changes in the environment
Textiles	○ Make choices about which different materials they will use ○ Use textiles in a variety of ways such as covering dens when building	○ Use a range of tools safely and accurately ○ Join materials using glue ○ Discuss features of their design that they like or would adapt	○ Draw around a template ○ Cut out fabric ○ Join fabrics: - Glue - Tape - Staples - Over sewing - Running stitch *Understand that 3D textile products can be assembled from two identical fabric shapes* ○ Decorate fabric with attached items - Buttons - Beads - Sequins - Braids - Ribbons ○ Colour fabrics: - Fabric paints - Printing - Painting *(Joining, decorating and colouring fabrics needs to be secure by the end of KS1)*	○ Create a prototype and use this to make a pattern. ○ Join fabrics: - Over sewing - Running stitch - Blanket stitch *Understand that a single fabric shape can be used to make a 3D textiles product.* *Understand seam allowance.* ○ Explore fastenings. ○ Sew on buttons and make loops. ○ Explore the strength and stiffness of fabrics.	○ Create a 3D product ○ Follow a pattern. - Use pattern pieces with a seam allowance. - Understand pattern layout. - Decorate (often before joining components) ○ Join fabrics: - Pin and tack pieces first. - Over sew - Back stitch - Blanket stitch - Machine (with supervision) *Understand that a 3D textiles product can be made from a combination of fabric shapes.* *Use a variety of fabrics and decorations.* ○ Make a quality product.