DESIGN AND TECHNOLOGY — SUBJECT VISION AND DRIVERS

Subject Aims

Design and technology aims to ensure that all pupils:

- Develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- Build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- Critique, evaluate and test their ideas and products and the work of others
- Understand and apply the principles of nutrition and learn how to cook

Subject Vision

Design and technology teaching at Silverdale St John's will enable the children to work creatively and imaginatively to design and make products to solve real life problems. Design and technology is a practical subject and will therefore give children the opportunity to adopt a 'hands-on' approach to their learning. At Silverdale St John's, we will make links with other areas of the curriculum such as mathematics, science, computing and art. Pupils will be encouraged to be risk takers, and adapt their designs where necessary. We will enable pupils to critique, evaluate and test their work and products with their peers. The children will also work with food and will have the opportunity to learn how to cook, to learn about nutrition, and to work safely and hygienically.

Learning	Community	Faith
Children will be taught the skills needed to access the D&T curriculum at the level which is right for them. The main strands of the D&T curriculum are: food, textiles, structures and mechanical and electrical systems and ICT. Children will revisit each of the strands as they progress through the school at a more challenging level.	Children will learn about how design and technology impacts on daily life and the wider world. They will learn about careers which encompass the skills of D&T, and how these are used today in our modern society. There will be opportunities to learn from visiting members of the community in a design and technolological role and to experience learning outside of the classroom, such as visiting businesses and designers in the local area.	The children will develop their reflection and thinking skills through the D&T process of designing and making. The subject will aim to inspire awe and wonder in the children with the vast range of products on today's market and a sense of well-being as they achieve their goals.

Inspiring success through learning, community and faith.

We strive to provide the Christian foundations to enable our children to make good decisions. Our children will be inspired, guided and supported to achieve success, as they are all of infinite worth. Taught through a creative curriculum, our children will become global citizens and will care for all of God's creation.

I can do all things through Christ who strengthens me.
Philippians 4:13

Key Stage 1

Design	Make	Evaluate
▪ Use pictures and words to convey what they want to design/make. ▪ Propose more than one idea for their product. ▪ Use kits/reclaimed materials to develop more than one idea. ▪ Model ideas with kits, reclaimed materials. ▪ Select appropriate technique explaining: First… Next… Last…. ▪ Explore ideas by rearranging materials. ▪ Select pictures to help develop ideas. ▪ Use drawings to record ideas as they are developed. ▪ Add notes to drawings to help explanations. ▪ Describe their models and drawings of ideas and intentions.	▪ Discuss their work as it progresses. ▪ Select materials from a limited range that will meet the design criteria. ▪ Select and name the tools needed to work the materials. ▪ Explain what they are making. ▪ Explain which materials they are using and why. ▪ Name the tools they are using. ▪ Describe what they need to do next.	▪ Explore existing products and investigate how they have been made. ▪ Decide how existing products do/do not achieve their purpose. ▪ Talk about their design as they develop and identify good and bad points. ▪ Note changes made during the making process as annotation to plans/drawings. ▪ Say what they like and do not like about items they have made and attempt to say why. ▪ Discuss how closely their finished product meets their design criteria and how well it meets the needs of the user.

Food	Textiles	Structures	Mechanisms
▪ Develop a food vocabulary using taste, smell, texture and feel. ▪ Group familiar food products e.g. fruit and vegetables. ▪ Explain where food comes from. ▪ Cut, peel, grate, chop a range of ingredients ▪ Work safely and hygienically. ▪ Understand the need for a variety of foods in a diet. ▪ Measure and weigh food items, non-statutory measures e.g. spoons, cups.	▪ Cut out shapes which have been created by drawing round a template onto the fabric. ▪ Join fabrics by using e.g. running stitch, glue, staples, over sewing, tape. ▪ Decorate fabrics with attached items e.g. buttons, beads, sequins, braids, ribbons. ▪ Colour fabrics using a range of techniques e.g. fabric paints, printing, painting.	▪ Explore how to make structures stronger. ▪ Investigate different techniques for stiffening a variety of materials. ▪ Test different methods of enabling structures to remain stable. ▪ Join appropriately for different materials and situations e.g. glue, tape. ▪ Mark out materials to be cut using a template. ▪ Use a glue gun with close supervision.	▪ Join appropriately for different materials and situations e.g. glue, tape. ▪ Try out different axle fixings and their strengths and weaknesses. ▪ Make vehicles with construction kits which contain free running wheels. ▪ Use a range of materials to create models with wheels and axles e.g. tubes, dowel, cotton reels. ▪ Roll paper to create tubes. ▪ Cut dowel using hacksaw and bench hook. ▪ Attach wheels to a chassis using an axle. ▪ Mark out materials to be cut using a template. ▪ Fold, tear and cut paper and card. ▪ Cut along lines, straight and curved. ▪ Use a hole punch. ▪ Insert paper fasteners for card. ▪ Experiment with levers and sliders to find different ways of making things move in a 2D plane.

Lower Key Stage 2

Design	Make	Evaluate
▪ Develop more than one design or adaptation of an initial design. ▪ Plan a sequence of actions to make a product. ▪ Record the plan by drawing using annotated sketches. ▪ Begin to use cross-sectional and exploded diagrams. ▪ Use prototypes to develop and share ideas. ▪ Think ahead about the order of their work and decide upon tools and materials. ▪ Propose realistic suggestions as to how they can achieve their design ideas. ▪ Consider aesthetic qualities of materials chosen. ▪ Use CAD where appropriate.	▪ Prepare pattern pieces as templates for their design. ▪ Cut slots. ▪ Cut internal shapes. ▪ Select from a range of tools for cutting shaping joining and finishing. ▪ Use tools with accuracy. ▪ Select from techniques for different parts of the process. ▪ Select from materials according to their functional properties. ▪ Plan the stages of the making process. ▪ Use appropriate finishing techniques.	▪ Investigate similar products to the one to be made to give starting points for a design. ▪ Draw/sketch products to help analyse and understand how products are made. ▪ Research needs of user. ▪ Identify the strengths and weaknesses of their design ideas in relation to purpose/user. ▪ Decide which design idea to develop. ▪ Consider and explain how the finished product could be improved. ▪ Discuss how well the finished product meets the design criteria of the user. ▪ Investigate key events and individuals in Design and Technology.

Food	Textiles	Structures	Mechanical and Electrical Systems and ICT
▪ Develop sensory vocabulary/knowledge using, smell, taste, texture and feel. ▪ Analyse the taste, texture, smell and appearance of a range of foods (predominantly savoury). ▪ Follow instructions/recipes. ▪ Make healthy eating choices – use the *Eatwell plate*. ▪ Join and combine a range of ingredients. ▪ Explore seasonality of vegetables and fruit. ▪ Find out which fruit and vegetables are grown in countries/continents studied in Geography. ▪ Develop understanding of how meat/fish are reared/caught.	▪ Develop vocabulary for tools materials and their properties. ▪ Understand seam allowance. ▪ Join fabrics using running stitch, over sewing, blanket stitch. ▪ Prototype a product using J cloths. ▪ Use prototype to make pattern. ▪ Explore strengthening and stiffening of fabrics. ▪ Explore fastenings (inventors?) and recreate some. ▪ Sew on buttons and make loops. ▪ Use appropriate decoration techniques.	▪ Develop vocabulary related to the project. ▪ Create shell or frame structures. ▪ Strengthen frames with diagonal struts. ▪ Make structures more stable by giving them a wide base. ▪ Measure and mark square section, strip and dowel accurately to 1cm.	▪ Develop vocabulary related to the project. ▪ Use mechanical systems such as gears, pulleys, levers and linkages. ▪ Incorporate a circuit into a model. ▪ Use electrical systems such as switches bulbs and buzzers. ▪ Use ICT to control products. ▪ Use lolly sticks/card to make levers and linkages. ▪ Use linkages to make movement larger or more varied.

Upper Key Stage 2

Design	Make	Evaluate
▪ List tools needed before starting the activity. ▪ Plan the sequence of work e.g. using a storyboard. ▪ Record ideas using annotated diagrams. ▪ Use models, kits and drawings to help formulate design ideas. ▪ Combine modelling and drawing to refine ideas. ▪ Devise step by step plans which can be read / followed by someone else. ▪ Use exploded diagrams and cross-sectional diagrams to communicate ideas. ▪ Sketch and model alternative ideas. ▪ Decide which design idea to develop.	▪ Make prototypes. ▪ Develop one idea in depth. ▪ Use researched information to inform decisions. ▪ Produce detailed lists of ingredients / components / materials and tools. ▪ Use a computer to model ideas. ▪ Select from and use a wide range of tools. ▪ Cut accurately and safely to a marked line. ▪ Select from and use a wide range of materials. ▪ Use appropriate finishing techniques for the project. ▪ Refine their product – review and rework/improve.	▪ Research and evaluate existing products (including book and web based research). ▪ Consider user and purpose. ▪ Identify the strengths and weaknesses of their design ideas. ▪ Give a report using correct technical vocabulary. ▪ Consider and explain how the finished product could be improved related to design criteria. ▪ Discuss how well the finished product meets the design criteria of the user. Test on the user! ▪ Understand how key people have influenced design.

Food	Textiles	Structures	Mechanical and Electrical Systems and ICT
▪ Prepare food products taking into account the properties of ingredients and sensory characteristics. ▪ Weigh and measure using scales. ▪ Select and prepare foods for a particular purpose. ▪ Work safely and hygienically. ▪ Show awareness of a healthy diet (using the eatwell plate). ▪ Use a range of cooking techniques. ▪ Know where and how ingredients are grown and processed. ▪ Consider influence of chefs e.g. Jamie Oliver and school meals, Hugh Fearnley-Whittingstall and sustainable fishing etc.	▪ Use the correct vocabulary appropriate to the project. ▪ Create 3D products using patterns pieces and seam allowance. ▪ Understand pattern layout. ▪ Decorate textiles appropriately (often before joining components). ▪ Pin and tack fabric pieces together. ▪ Join fabrics using over sewing, back stitch, blanket stitch or machine stitching (closer supervision). ▪ Combine fabrics to create more useful properties. ▪ Make quality products.	▪ Use the correct terminology for tools materials and processes. ▪ Use bradawl to mark hole positions. ▪ Use hand drill to drill tight and loose fit holes. ▪ Cut strip wood, dowel, square section wood accurately to 1mm. ▪ Join materials using appropriate methods. ▪ Build frameworks to support mechanisms. ▪ Stiffen and reinforce complex structures.	▪ Develop a technical vocabulary appropriate to the project. ▪ Use mechanical systems such as cams, pulleys and gears. ▪ Use electrical systems such as motors. ▪ Program, monitor and control using ICT.