Design Technology Curriculum Summary

Walking into a DT lesson at St John's is to observe a world in which even the youngest children are engaging in independent problem solving, collaborative exploration of design and construction, imaginative expression of individual design concepts and above all the buzz of excited learning. Skills and knowledge are taught in a way that enables children not simply to reproduce models but to explore ideas and build on their experience and understanding in individual and varied ways, persevering to overcome problems and find solutions. All the design briefs are based in real purposes for learning that are motivating and engaging.

Prep-prep
In Kindergarten and Transition 1, the context of DT changes as the curriculum follows the needs and interests of the children. Designing, creating and constructing offer opportunities to develop a wide range of skills including collaboration, speaking and listening, measuring, imagination and fine and gross motor control. In Transition 2, the children also have discrete DT lessons. Construction materials are always available and a group of children can often be found building in the pre-prep classrooms.

Kindergarten
Key skills include:

- Select tools and choose techniques that they need, in order to construct with a wide range of objects, deciding on appropriate resources and adapting their work where necessary.
- Develop their own ideas, create a plan (usually spoken) and follow it through.
- Reflect on their finished product and evaluate their achievements.
- Cut and join materials safely using scissors, glue, string and sellotape.

Transition 1 (T1)
Key Skills include:

- Generate and talk about their ideas, developing these by designing, planning and shaping materials in order to put together chosen components.
- Select tools, techniques and materials for making models and explore the sensory qualities of materials.
- Develop an understanding of the way materials behave and how they can be joined to make new products.

Transition 2 (T2)
Key skills include:

- Communicate using a variety of methods including drawing, designing and making models.
- Measure, mark out, cut and shape with increasing accuracy and learn how simple mechanisms can be used in different ways.
- Use simple finishing techniques to improve the appearance of their products and learn safe procedures when using more complex tools.
- Evaluate their ideas identifying what they like/dislike and how work could be improved in the future, while developing a positive, and where necessary, critical attitude to technology.

These skills are developed in the contexts of exploring, designing and making a range of objects, which will vary depending on the interests of the children and the topics covered. Examples include:

- Photograph frames
- Pen pot holders

- Lifting devices
- Space buggy/woven structures

Form 1
Key skills include:

- Develop problem-solving skills including the ability to plan and to make.
- Work independently and in groups, taking increased responsibility for their own work.
- Use a hammer and nails safely
- Learn rules about the safe use of tools and materials using an increasingly wide range of media as they progress through the school.
- Respect and care for their environment, selecting, using, storing and returning their own materials safely.
- Use their imagination to produce a design/model, which incorporates the skills they have learnt.

These skills are developed in the contexts of exploring, designing and making a range of objects, which will vary depending on the interests of the children and the topics covered. Examples include:

- Shadow puppets
- Mirror frames
- Levers and linkages
- Roman inventions e.g. creating a siege machine or model horse and chariot.
- Iron man design challenge

Form 2
Key skills include:

- Develop problem-solving skills including the ability to plan and to make, whilst evaluating their own work at each stage of its development.
- Work independently and in groups, taking increased responsibility for their own work.
- Learn rules about the safe use of tools and materials using an increasingly wide range of media as they progress through the school
- Respect and care for their environment, selecting, using, storing and returning their own materials safely and with regard to economy in use.
- Use their imagination to produce a design/model, which incorporates the skills they have learnt.
- Examine the design features in existing products and develop an ability to make positive and critical statements about the attributes of that product.
- Explore and construct a crank mechanism

These skills are developed in the contexts of exploring, designing and making a range of objects, which will vary depending on the interests of the children and the topics covered. Examples include:

- Moving pictures and pop up books
- Pneumatics
- Gaining concepts within pulley systems and basic circuitry

Form 3 – 6 Skills
Over the course of children's time at Senior House, they will cover the following skills in a spiraling curriculum. Each skill is revisited each year in a more sophisticated way.

- Generate ideas for products after thinking about who will use them and what they will be used for.
- Develop ideas and explain them clearly, putting together a list of what they want their design to achieve
- Plan what they have to do, suggesting a sequence of actions and alternatives if needed
- Communicate design ideas in different ways as these develop, bearing in mind aesthetic qualities, and the uses and purpose for which the product is intended.
- Select appropriate tools and techniques for making their product suggest alternative ways of making their product if first attempts fail
- Explore the sensory qualities of materials and how to use materials and processes

- Measure, mark out, cut and shape a range of materials, and assemble, join and combine components and materials accurately use finishing techniques to strengthen and improve the appearance of their product.
- Reflect on the progress of their work as they design and make, identifying ways they could improve their products carry out appropriate tests before making any improvements recognise that the quality of a product depends on how well it is made and how well it meets its intended purpose.
- Understand how the working characteristics of materials affect the ways they are used and how materials can be combined and mixed to create more useful properties.

These skills are developed in a wide range of contexts in each year:

Form 3
- An motor driven buggy
- A ball maze
- Electronic Matching Game

Form 4
- Fairground rides
- Electronic Textiles – making a soft toy with internal circuitry
- Cams and Cranks – mechanical engineering
- Prototyping and team problem solving through practical challenges

Form 5
- 3D animals – puzzles to build and flat pack
- LED 'Jitterbots' with pressure switches
- Introduction to 2D Design
- Basic carpentry and joinery through making an jewelry box
- Desk lamp project.

Form 6
- Toothbrush/pen holders
- Fabric coat of arms
- Design Enterprise – organizing a charity event.
- Clock faces using CADCAM

Further opportunities

In DT Clubs up to Form 4, these are some of the projects which also extend children's' skills:
- Mobiles or wind chimes
- Soft toys for enterprise initiative
- Flight – making gliders
- Marionette puppets
- Storage container

For Form 5 and Form 6, DT Club offers the opportunity for choice based projects where individuals can be guided through a particular discipline. This may mean that an individual might be interested in developing carpentry skills or making a fabric bag. Work done in these sessions also allows potential Scholarship pupils to build their portfolio of work.

Contribution to Spiritual, Moral, Social and Cultural Development
DT develops SMSC in a number of ways, including:
- Reflecting on products and inventions, the diversity of materials and ways in which design can improve the quality of our lives
- Opportunities to work as a team, recognising others' strengths, sharing equipment
- Develop imagination, intuition, inspiration and insight

- Develop creativity through risk taking, imagination, perseverance, evaluation and collaboration
- Understanding how products have been invented to solve problems from a wide range of needs around the world
- Through sharing in the ability to create and invent
- Developing perseverance