	St Elizabeth's Catholic Voluntary Academy **Design and Technology Policy**	Issue Number 1 Issued: January 2024 Review: September 2025

Our Mission Statement and Guiding Rationale

"Be like Jesus. Be your best. Be Safe. Be Caring."

St. Elizabeth's Catholic Academy is a caring, Catholic school community, where we celebrate that everyone is made in the image and likeness of God. Here, individuals are helped to achieve their full potential, through experiences and opportunities that nurture the whole person. These experiences include high-quality teaching and learning and a Design and Technology curriculum that allows pupils to investigate, design, make and test in a safe way in order to enhance their knowledge and understanding of the created world.
Pupils are empowered to become caring individuals, capable of independent thought, through links to the world around us and the demands of religious commitment in everyday life.

Aims of the Policy

At St. Elizabeth's Catholic Academy, we are committed to high-quality teaching and learning in Design and Technology to raise standards of achievement for all pupils. All staff and governors have been consulted in developing this policy, which summarises expectations and common working practices. The policy reflects what has been agreed in terms of approach and consistency and makes explicit the best practice in Design and Technology to which the school aspires. It also reflects the aims and objectives of the school and supports its vision.

Learning is the purpose of the whole school and is a shared commitment. At St. Elizabeth's Catholic Academy, we recognise that education involves children, parents, staff, governors, the community, diocese, and the local authority, and that for optimum benefit all should work closely together to support the process of learning within Design and Technology.

Working in partnership, we aim to:

- Provide a Christ-centred, supportive, positive, healthy, caring and safe environment, which has high expectations and values all members of the school community.
- Recognise the needs and aspirations of all individuals and provide opportunities for all pupils to make the best possible progress, attain the highest personal achievements and enable them to be their best and fulfil their potential.
- Ensure children can develop as informed and insightful citizens of tomorrow, who understand the complexity of people's lives and the diversity of societies in order to create products and models that are created for a target market or audience.

- Provide rich and varied contexts and experiences for pupils to acquire, develop and apply a broad range of knowledge, skills and understanding.
- Provide a curriculum which promotes the spiritual, moral, social, cultural, physical, mental and emotional development of the pupils.
- Develop individuals with lively, enquiring minds, good thinking skills, self-respect, self-discipline, positive attitudes and a sense of identify from their study of Design and Technology.
- Encourage all children to be enthusiastic and committed learners, promoting their self - esteem, self-worth and emotional well-being.
- Develop children's confidence and capacity to learn and work independently and collaboratively.

Design and Technology Curriculum Intent Statement

At St. Elizabeth's, we strive for our children to know and understand that Design and Technology touches every aspect of their lives. The intent of the design and technology curriculum is to prepare children to take part in the development of tomorrow's rapidly changing world. For them to have a greater understanding of real-life applications; with emphasis on the roles that inventors, designers, engineers, manufacturers and chefs have in shaping our lives. By teaching design and technology, we are informing our children about social and environmental issues - they may well become potential innovators in the future.

We aim to provide a language rich curriculum that will inspire our children so that they can confidently articulate what they observe and experience in Design and Technology. We want our children to be able to ask perceptive questions, think critically and support their opinions using sources of evidence. It is our ambition that through our Design and Technology curriculum, children gain knowledge and understanding that products always go through a design process (identifying a need, investigating existing products, designing, modelling, making and testing). Additionally, the developing of new technologies have always defined societies, past, present and future.

We aim for children to have acquired the essential characteristics of designers/engineers:
- Significant levels of originality and the willingness to take creative risks to produce innovative ideas and prototypes.
- An excellent attitude to learning and independent working.
- The ability to use time efficiently and work constructively and productively with others.
- The ability to carry out thorough research, show initiative and ask questions to develop an exceptionally detailed knowledge of users' needs.
- The ability to act as responsible designers and makers, working ethically, using finite materials carefully and working safely.
- A thorough knowledge of which tools, equipment and materials to use to make their products.
- The ability to apply mathematical knowledge.
- The ability to manage risks exceptionally well to manufacture products safely and hygienically.
- A passion for the subject, and knowledge of up-to-date technological innovations in materials, products and systems.

Design and Technology Curriculum Intent Model

1. **Curriculum drivers** shape our curriculum breadth in Design and Technology. They are derived from an exploration of the backgrounds of our students, our beliefs about high quality education and our values. They are used to ensure we give our students appropriate and ambitious curriculum opportunities. Our curriculum drivers are **community**, **spirituality**, **culture**, **democracy** and **possibilities**.

2. **Cultural capital** gives our students the vital background knowledge required to be informed and thoughtful members of our community who understand and believe in British values.

3. Curriculum breadth is shaped by our curriculum drivers, cultural capital, subject topics and our ambition for students to study the best of what has been thought, constructed and said by many generations of inventors, designers, engineers, architects, academics and scholars.

4. Our curriculum distinguishes between subject topics and 'Curriculum Themes'. Subject topics are the specific aspects of subjects that are studied.

5. **Curriculum Themes** tie together the subject topics into meaningful schema. The same concepts are explored in a wide breadth of topics. Through this 'forwards-and-backwards engineering' of the curriculum, students return to the same themes over and over and gradually build understanding of them. In Design and Technology, these curriculum themes are: **Take inspiration from design throughout history** (Appreciating the design process that has influenced the products we use in everyday life); **Design, evaluate and improve** (Thinking and seeing design as a process); **Master practical skills** (Developing the skills needed to make high quality products).

6. **Golden Threads**: These 'Golden Threads' help students to relate each topic to previously studied topics and to form strong, meaningful schema. In Design and Technology these golden threads include: **Mechanisms and Mechanical Systems, Electrical Systems, Materials and Techniques, Construction, Cooking and Nutrition, Textiles, Programming and Electronics.**

7. Cognitive science tells us that working memory is limited and that cognitive load is too high if students are rushed through content. This limits the acquisition of long-term memory. Cognitive science also tells us that in order for students to become creative thinkers, or have a greater depth of understanding they must first master the basics, which takes time.

8. **Progression:** For each of the Curriculum Themes, learning is planned by year group, each of which includes the procedural and Golden Threads in each subject, giving pupils a way of expressing their understanding of the Curriculum.

9. **Cognitive Domains:** Within each year group, students gradually progress in their procedural fluency and semantic strength through three cognitive domains: **Remembering**, **Knowing** and **Reasoning**. The goal for students is to display sustained mastery at the 'Knowing' stage of understanding by the end of each phase (Key Stage 1, Lower Key Stage 2, Upper Key Stage 2) and for the most able to have a greater depth of understanding at the 'Reasoning' stage.

10. As part of our progression model, we use a different pedagogical style in each of the cognitive domains of Remembering, Knowing and Reasoning. This is based on the research of Sweller, Kirschner and Rosenshine who argue to direct instruction in the early stages of learning and discovery-based approaches later. We use direct instruction in the Remembering domain and problem-based discovery in the Reasoning domain. This is called the reversal effect.

11. Our curriculum design is based on evidence from cognitive science; three main principles underpin it:
    - Learning is most effective with spaced repetition.
    - Retrieval of previously learned content is frequent and regular, which increases both storage and retrieval strength.
    - By revisiting Golden Threads, pupils are able to build a strong schema, and develop skills within Design and Technology.

12. In addition to the three principles, we also understand that learning is invisible in the short-term and that sustained mastery takes time.

13. Our content is subject specific. We make intra-curricular links to strengthen schema.

Design and Technology Curriculum Implementation: Planning and Teaching

14. Our Design and Technology curriculum has been structured to ensure that our children experience activities which involve them handling a range of materials and knowing their properties. Also, children will experience using age-appropriate tools/equipment throughout the school. Lessons will be sequenced to enable children to build up component knowledge/skills to achieve an end product.

15. Within Design and Technology lessons, children will be instructed on issues of safety and the correct handling of tools / materials.

16. Revisits/retrieval practice from prior learning (both in year and from previous lessons) are built into all Design and Technology lessons in order to maintain, embed and deepen learning through opportunities to apply priory learning.

17. The planning and teaching of Design and Technology is organised by Key Stage and year groups into subject topics or units. Children study topics that address each of the golden threads at least once in both key stages – with the exception of 'Electronic Systems' and 'Programming and Electronics' which are taught in UKS2. In EYFS, children work towards their 'Expressive Arts and Design – Creating with Materials' and 'Physical Development – Fine Motor Skills' ELGs and will experience Design and Technology primarily through themed topics.

18. A number of 'Golden Threads' are identified for each of the subject topics to focus teaching and learning and build schema. These common themes are: Mechanisms and Mechanical Systems, Electrical Systems, Materials and Techniques, Construction, Cooking and Nutrition, Textiles, Programming and Electronics.

19. Vocabulary is specifically identified in the planning for each of the cycles. Tier two vocabulary is that which drives the learning in Design and Technology and helps determine the kind of tasks the children undertake. 'Remembering' tasks may be driven by words such as: list, identify, describe or label. Tasks focusing on 'Knowing' or 'Reasoning' and, therefore, applying knowledge may be driven by words such as: compare and contrast, explain, justify, investigate. Tier three vocabulary used in each subject topic is that which is specific to that aspect of the topic. For instance, when

learning about Mechanics and Mechanical systems in KS1 some tier three vocabulary would include words such as: wheel, axle, axle holder, chassis, body and cab assembling. As the golden thread is revisited in UKS2 some tier three vocabulary would include words such as: rotary, motion, linear, cams, cam movement: falling, dwelling, rising, linear reciprocating, automaton, camshaft, crank and handle, drive belt, rotation, spindle, driver, follower, ratio, carousel, friction etc.

20. The topics taught in Design and Technology across the school can be found in the Design and Technology section of our website within the 'Progression in Design and Technology' document and the 'Knowledge Map' document.

21. Within each subject topic, pupils are provided with opportunity to reflect upon questions of social justice, based on the principles of Catholic Social Teaching and their learning in Design and Technology. For example, under the CST strand 'Stewardship' (We are stewards of the earth), when learning about 'moving vehicles', children will consider 'Does it matter how a car/ van/ truck is powered?' which may lead to discussions about e.g. what emissions are or the pros and cons of using public transport. Children will be led to consider the experiences of others in our world today and, as such, will be encouraged to be informed and insightful citizens of tomorrow, who can appreciate and learn from design and technology all around them.

Design and Technology Curriculum Impact

Because learning is a change to long-term memory, it is impossible to see impact in the short term. We use probabilistic assessment based on deliberate practice. This means we observe the practices taking place to determine whether they are appropriate, related to our goals and likely to produce results in the long term.

We assess understanding of the composite knowledge using the children's work in books, their contributions to discussions and through revisits away from the point of learning.

Assessment is recorded on INSIGHT, where teachers make a 1-4 judgement (in line with the Assessment and Feedback policy and Trust Assessment Framework).

Lesson observations, learning walks, book scrutiny and pupil voice activities are used to support the moderation of children's work and assessment data. This supports leaders to monitor pedagogical choices match expectations for curriculum breadth and depth.

Design and Technology Subject Leader

The Subject leader has a variety of roles. These include:
- Taking the lead in policy development
- Quality assuring Design and Technology knowledge organisers, resources and planning throughout the school
- Supporting colleagues in their development and implementation of Design and Technology knowledge organisers, resources and planning, and in assessment and record-keeping activities
- Monitoring progress in Design and Technology and advising the Senior Leadership Team on action required

- Taking responsibility for the purchase and organisation of central resources for teaching and learning in Design and Technology
- Using non-contact time to support colleagues
- Keeping up-to-date through research and continuing professional development.

Organisation

The learning environment in Design and Technology will be managed in such a way as to facilitate different styles of learning. Opportunities will be made for:

- Whole class teaching
- Group work, organised according to appropriate criteria (i.e. attainment, mixed attainment, friendship, etc)
- One-to-one teaching
- Conferencing
- Collaborative learning in pairs or groups
- Independent learning

All areas of the learning environment will be planned for, including, where appropriate, the outside areas, in order to ensure opportunities for a range of activities, which will develop appropriate knowledge, skills and understanding.

The classroom will be organised to facilitate learning and the development of independence. For example:

- Resources are made available for the study of Design and Technology and to promote further interest.
- Labels and posters should be used wherever possible/appropriate and reflect the inclusive nature of the school.
- Children will be involved in the maintenance and care of generic Design and Technology equipment and resources.
- Classrooms provide a stimulating and purposeful learning environment, including thought-provoking and stimulating displays to include children's work, tier three vocabulary and helpful resources that document the learning journey through the specific Design and Technology topic in question.

Adaptations and Scaffolding

So that we always have the highest possible expectations of individual learners and so they can demonstrate what they can do, understand and achieve, teachers will adapt the curriculum according to individual needs through:

- Pace
- Challenge
- Mastery
- Content
- Task

- Relevance
- Resources
- Extension
- Autonomy
- Teacher/adult support

Adapted tasks will be detailed in planning and evident within lessons. All groups of pupils have access to quality-first teaching, through the five key principles:

- Flexible grouping
- Cognitive and metacognitive strategies
- Explicit instruction
- Using technology to support
- Scaffolding

Extra support is given in the classroom by teaching assistants. Additionally, advice is sought from relevant external support agencies when and where the need demands it. (See Special Educational Needs Policy)

Assessment, Recording and Reporting

Regular formative assessments are made of pupils' work and responses in Design and Technology in order to establish the level of attainment and progress and to inform future planning. Formative assessment is used to guide the progress of individual pupils. It involves identifying each child's progress in each area of the curriculum, determining what each child has learned and what should be the next stage in his/her learning. Live marking and feedback is given in all Design and Technology lessons and feedback sessions are used to review the previous lesson's learning. Pupils respond to feedback and address misconceptions using purple pen (where this is written work). All results and information from assessments are analysed and used to inform future planning. (See Assessment, Marking and Feedback Policy)