Oakfield
HIGH SCHOOL & COLLEGE

Design Technology Policy

Curriculum purpose

'Curriculum for life'

Our curriculum allows all learners to flourish, have parity of opportunity, be life ready, harness their potential, creativity, have rich experiences and broaden their life choices. Our curriculum is built on the principle of 'powerful knowledge' which is described as 'the most powerful knowledge that goes beyond 'common sense' (what we acquire in our everyday experience).

Purpose

Our policy and practice is intended to:

- Introduce the aims and objectives of the Art department
- Outline the key components within Art
- Outline the knowledge skills and understanding for all Key stages
- Explain the effective Teaching and Learning strategies utilised in Art
- Provide the monitoring strategies used within Art

Aim:

At Oakfield we recognise that Design and Technology is a practical and valuable subject which involves the study of polymers, metals, timbers, electronics, food and textiles as well as the development of drawing and designing skills. Learners actively contribute to their own creativity, cultural wealth and well-being as well as that of their community. It teaches them how to take risks and so become more resourceful, innovative, enterprising and capable. At its core is creativity and imagination. Learners understand how to design and make products and systems that solve genuine, relevant problems within different contexts. These are all skills that are directly transferable to other subject areas but cannot be as effectively developed in those areas.

Objective:

- To develop the learner's designing skills: generating and developing ideas, clarifying a task, creating design proposals, communicating ideas, planning and evaluating
- To develop the learner's making skills: working with materials and components, tools and processes, e.g. planning, measuring and marking out, cutting and shaping, joining and combining, finishing and evaluating.
- To develop knowledge and understanding
- To develop their capacity to create high quality products through combining their designing and making skills with knowledge and understanding. Nurture creativity and innovation through designing and making
- Explore values about and attitudes to the made world and how we live and work within it

- Develop an understanding of technological processes, products, and their manufacture, and their contribution to society
- To apply value judgements of an aesthetic, economic, moral, scientific and technical nature
- To ensure learners have access to a wide range of resources which are freely available and regularly maintained
- To work alongside other Targeted areas of the curriculum
- To develop Schemes of Work that are tailored to the individual needs of the learners
- To work in line with the vision and ethos of the school including working with Parents, Governors and Advisors

Components of powerful knowledge:

- Learners will develop knowledge of design components
- Learners will develop knowledge and understanding of the 'make' process
- Leaners will understand the evaluation process
- Learners will develop and apply technical knowledge

Key Stage 3

Knowledge, Skills and Understanding

Design

- 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

Make

- 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

Evaluate

- 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

Technical knowledge

- understand and use the properties of materials and the performance of structural elements to achieve functioning solutions
- understand how more advanced mechanical systems used in their products enable changes in movement and force
- understand how more advanced electrical and electronic systems can be powered and used in their products [for example, circuits with heat, light, sound and movement as inputs and outputs]
- apply computing and use electronics to embed intelligence in products that respond to inputs [for example, sensors] and control outputs [for example, actuators] using programmable components [for example, microcontrollers]

Key Stage 4

Knowledge, Skills and Understanding

- demonstrate their understanding that all design and technological activity takes place within contexts that influence the outcomes of design practice
- develop realistic design proposals as a result of the exploration of design opportunities and users' needs, wants and values
- use imagination, experimentation and combine ideas when designing
- develop the skills to critique and refine their own ideas whilst designing and making communicate their design ideas and decisions using different media and techniques, as appropriate for different audiences at key points in their designing
- develop decision making skills, including the planning and organisation of time and resources when managing their own project work
- develop a broad knowledge of materials, components and technologies and practical skills to develop high quality, imaginative and functional prototypes
- be ambitious and open to explore and take design risks in order to stretch the development of design proposals, avoiding clichéd or stereotypical responses
- consider the costs, commercial viability and marketing of products
- demonstrate safe working practices in design and technology
- use key design and technology terminology including those related to: designing, innovation and communication; materials and technologies; making, manufacture and production; critiquing, values and ethics

Key Stage 5

Knowledge, Skills and Understanding

- Understand the characteristics and working properties of materials relevant to product design and manufacture, including: metals, woods, polymers, textiles, composites, smart and modern materials
- Understand the use of adhesives, permanent, and semi-permanent fixings
- Understand the use of surface finishes and coatings to enhance appearance, and methods of preventing corrosion and decay such as paints, varnishes, sealants, preservatives, anodising, plating, coating, galvanization and cathodic protection

- Understand the performance characteristics of woods, metals, and polymers including toughness, hardness, elasticity and durability in relation to specific product applications
- Understand the application of smart and modern materials
- Understand production processes including moulding, extrusion, laminating, milling, turning, casting, stamping, and forming; the use of ICT, prototyping, jigs and fixtures

Teaching and learning

Oakfield has used the 'Unleashing Greatness Framework' to help leaders to deliver Instructional Rounds (appreciative inquiry) to provide a more detailed analysis of the best practice across the school. This has provided Theories of Action, a set of guidance, protocols and procedures that will hold us to account for the delivery and impact of our teaching and learning.

In Design and Technology, the theories of action are:

Lesson Structure

- When teachers effectively establish and utilise systematic lesson components (retrieval, modelling, activity, feedback). Then clear routines and structures are developed. Learners are clear about their expectations and routines. As a result, behaviour, engagement, independence and curiosity will be enhanced

Questioning

- When teachers develop reasoning and higher order thinking skills through the use of Socratic questioning (Conceptual clarification, Probing assumptions, Probing rationale and perspectives). Then learners will have deeper levels of understanding, enhanced analytical and critical thinking skills and higher levels of attainment

Vocabulary

- When teachers use precise language, clearly and consistently to develop vocabulary and terminology. Then learners have a clear understanding of concept, develop skills more rapidly, communicate in a more precise manner and apply this understanding to a wide range of contexts

Learner Independence

- When teachers create a safe and stimulating environment which promotes learner independence and advocates agency. Then learners develop autonomy within lessons, showcase resilience, are willing to take risks and subsequently grow in confidence in their learning

Collaboration

- When teachers consistently use collaborative or group activities as part of their teaching strategies. Then learner's ability to work as a team increases. They are more willing to trust one another through reciprocal participation to further consolidate their understanding

Assessment

At Oakfield we firmly believe that the focus should be on 'learning' rather than teaching, and value the importance of our school rubric assessment as a tool for all of our learners. The rubric assessments are written in a bronze, silver, gold and platinum structure. The rubrics are then shared and are made clear to learners to develop their independence and evaluation of their work (known as agency) and future target setting. Self-evaluation is key in getting learners to understand what they can do well and what they need to improve on further.

Monitoring arrangement

The Head of School and leadership team will:

- Monitor the subject through the Oakfield self-evaluation schedule and monitoring schedule which are reviewed annually

Governors will:

- Monitor the work of each subject through the Oakfield self-evaluation and monitoring schedule which includes a timetable of Departmental meetings and a Departmental leader's report to governors, which are reviewed annually

Departmental leader will:

- Monitor learners work and quality of teaching and learning
- Review Curriculum Maps and Schemes of Work based on suitability of use
- Review and monitor risk assessments for practical lessons
- Analyse performance data
- Produce a SES
- Attend link meeting

Links to other policies:

- Teaching and Learning
- Behaviour for Learning
- Monitoring
- Assessment for Learning
- Health and Safety
- Homework
- Marking and Feedback

Date approved:	**22nd November 2022**
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Signed Executive Headteacher:	**C Taylor**