Aims & Purpose of Design & Technology

The Purpose

**Design & Technology’s Uniqueness**

Design & Technology is a very special subject within the school curriculum. It offers something no other subject has; it enables students to create a real three-dimensional or two-dimensional outcome, which is unique and individual.

No other subject delivers such an experience where students can create and realise outcomes that solve problems or address opportunities, where imagination can become reality.

Design & Technology not only offers this unique feature, but it also gives students skills, methods of working and ways of thinking, which can be used in any profession or occupation, as well as giving students access to related careers and opportunities.

Throughout this document you will see references to the original DT National Curriculum Working Party Interim Report from 1988, where a lot of this original thinking on the nature of Design & Technology was explored and defined. Most did not appear in the final version, as that was the formal legal conclusion of the process. However, what was discussed is still as relevant today as it was then.

**Style of Delivery**

Design and Technology can be delivered in many ways, either working to the strengths of the staff or supporting the ethos of the school. However, all approaches, whatever route is undertaken, should have the Design Process at its centre, as well as the need to create an appropriate outcome in whatever media you choose to follow.

Some people have asked why the focus of this site is just upon design, this is because it is the core of the subject and all we do. Technology will come and go; it will evolve; it will change over time. Technology is there only to serve the design process, which is the one constant that will never change and runs throughout all our work.

**The Course**

The course suggested here is taught through the concept of Architecture, Design & the Built Environment and Urban Design, using the medias of Graphics and Model Making. But the main aspect of the course is its flexibility, where projects can be added or taken out accordingly to meet the needs of the students and as new opportunities appear. It runs over five years, from Year 9, KS4 to KS5.

The context of Harchester is used for people to hang their work on and enable teachers explore interesting avenues as they arise. It is a fictional town because it allows consistency. It is a frozen point in time, which allows repeated use throughout the years. When we used an actual town, many of the projects become redundant as the town itself began to resolve these problems and address some of the issues suggested in the assignments on this website.

**What should be happening in DT?**

It is essential to engage students, and one of Design and Technology’s strengths is the variety of approaches that can be used in its delivery. However, its core delivery method is through projects and activities. The National Curriculum working party discussed what the nature of these design activities should be:

‘design and technological activity involves pupils in making judgments of many kinds - technical, economic, social, aesthetic and others. Indeed, one way of viewing this area of educational experience is as a progressive refinement in the art of making’

‘these judgments which are characteristic of the world of practical action.’

‘As has often been said, there is never any single right answer to a design and technology problem. The requirements for design often conflict, decisions have frequently to be made on a basis of insufficient evidence, and compromise is intrinsic to the activity. What is regarded as optimal is determined by the ways in which constraints are defined and values are assigned priority. Sometimes performance of the artefact or system - its ability to do what was intended - will dominate; sometimes ergonomic considerations concerned with ease of use; sometimes aesthetic appeal; sometimes cost.’

National Curriculum Design and Technology Working Group – Interim Report 1988 DfE

Aims for Design

To give students an understanding that:

* Design is the process of designing and creating products, systems, and environments, to improve the quality of people’s lives and relationships.

To develop in students:

* Design Capability.
* An enquiring mind.
* A thirst and excitement to explore new things and the world we live in.
* Transferable Skills, and how they can be used to enrich any career path as well as give them opportunities in the design industries.
* Understanding of the impact & importance of Design & Technology in the Outside World and our daily lives.
* An understanding that Technology is always changing and evolving and the need to take this onboard change, as and when it arrives.

To evolve in students:

* Design Creation skills
* Communication skills
* Adaptability skills
* Learning skills
* Flexibility skills
* Realisation skills
* Working Methods skills

To connect students to the outside world

* How it offers career opportunities in DT and show career possibilities
* Introduce students to the multi-cultural aspects of the world & how it can enrich our work
* To ensure an understanding of their impact upon the world

What is Design Capability

Design capability was defined during the development of the National Curriculum and is still as relevant today as it was when original conceived:

‘Design and Technological capability at the very least, covers all of the following:

1. pupils are able to use existing artefacts and systems effectively;
2. pupils are able to make critical appraisals of the personal, social, economic and environmental implications of artefacts and systems;
3. pupils are able to improve, and extend the uses of, existing artefacts and systems;
4. pupils are able to design, make and appraise new artefacts and systems;
5. pupils are able to diagnose and rectify faults in artefacts and systems.

To achieve goals such as these pupils will need to bring together and use knowledge, skills, value judgments and personal qualities, the particular "components and combination being determined by the context and nature of the undertaking.’

National Curriculum Design and Technology Working Group – Interim Report 1988 DfE

This definition is further developed below, expanding some of the elements of Design capability, as I understand it, gained from my experience of teaching and reflection on the subject’s progress over the years:

Design Capability 2020

**Design**

* Ability to generate ideas
* Ability to realise ideas
* Ability to produce an outcome and solution
* To be flexible and open to new ideas, approaches, directions and working methods
* Ability to reflect and modify accordingly

**Communication**

* Be able to explain ideas visually
* Be able to develop ideas through ICT
* Be able to communicate in a graphical and three-dimensional form
* Be able to communicate visually, verbally and through the written form, and be flexible to take on new methods of communication as they arrive.
* Be able to exercise of the skills of negotiating with others; persuading; understanding the point of view of others; criticising and accepting criticism; and accepting compromise.

**Awareness**

* Understand Design’s impact in the outside world and its resulting implications
* Understand the ways in which design and technology has affected, and is affecting, society and the economy.
* Understand how technological progress impacts design and use it effectively
* Understand multi-cultural issues & special needs with regards to design
* Understand how design can lead into careers, professions and opportunities

**Method**

* Understand how outside resources, past or present can inform work
* Be able to adapt and evolve procedures to progress work
* Be able to work with others effectively and purposefully
* Know when to call in support and use it effectively
* Use a range of strategies to evolve and progress work

‘Historically, good communication skills, together with confidence in an ability to solve problems, willingness to take risks and readiness to persevere in the face of repeated set-backs have often proved as important in determining the success of technological activities as possession of special knowledge and techniques.’

National Curriculum Design and Technology Working Group – Interim Report 1988 DfE

What are the skills that students gain

Design Creation skills

* Creating ideas, visual brainstorming, evolving ideas, modelling, prototyping.

Communication skills

* Drawing, formal and sketching, using colour, layout, visual language, ICT, CAD, presentation, verbal, written.

Adaptability skills

* Be open to new directions, be able to see better alternatives, to be able to change directions after discussion with others if necessary. Accepting mistakes and building upon setbacks.

Learning skills

* Access knowledge effectively, take on new technologies, approaches, methods of working. Feeding creativity and imagination.

Flexibility skills

* Be able to compromise and negotiate to evolve the work. Be prepared to find out when you do not know something. Admit you cannot know everything and act accordingly.

Realisation skills

* Realising ideas, plan and organise construction, construction in solid materials, construction in graphic materials.

Working Methods skills

* Project planning, investigation strategies, analysis strategies, teamwork, evaluation and assessment skills, cultural referencing and understanding, biomimicry, Critical Path Analysis (CPA).

Uniqueness in the Curriculum

In these uncertain times, those teaching Design and Technology must ensure they have a clear understanding of what Design & Technology is and what makes it so different, unique and special. In the past, some people have linked it to other subjects, and even suggested that they can deliver the same capabilities just as well, but:

**What is Design & Technology?**

Design & Technology is defined as:

* designing and creating products, systems, and environments, to improve the quality of people’s lives and relationships, where students produce unique and individual outcomes, which are purposeful and address an opportunity or need.

Others have gone into expand this further by stating that:

‘design and technology is always purposeful (i.e. developed in response to perceived needs or opportunities, as opposed to being undertaken for its own sake), takes place within a context of specific constraints (e.g. deadlines, cash limits, ergonomic and environmental requirements as opposed to unconstrained, blue-sky research) and depends upon value judgments at almost every stage.’

It is:

‘A visionary activity, a mode of thought which is non-verbal and which is characteristic of design and technology throughout history’

And:

‘when pupils engage in design and technological activities there are rich opportunities for the development of a broad range of communication skills involving widely differing audiences. Similarly, the real-world contexts of such activities provide fertile ground for the growth of economic and careers awareness and business understanding. Valuable personal qualities such as imagination, persistence, the disposition to see a job through to the end, and the ability to judge worthwhile risks are all needed for successful designing and technological activity. These, together with interpersonal skills associated with effective teamwork, are outcomes which characterise best practice in this field.’

So:

‘We need to understand design and technology, therefore, not only to solve practical problems, to invent, optimise and realise solutions, but also so that we can acquire a sense of its enormous transformatory power.- Used wisely, they bring new and worthwhile goals within reach. By the end of the period of compulsory education pupils should have some understanding of the value options and decisions that have empowered the technological process in the past and which are doing so today.’

National Curriculum Design and Technology Working Group – Interim Report 1988 DfE

Design’s Relationship to Other Curriculum Subjects

With regards to other subjects associated to DT:

**What is Science?**

Science is defined as:

It is ‘the [systematic](https://dictionary.cambridge.org/dictionary/english/systematic) [study](https://dictionary.cambridge.org/dictionary/english/study) of the [structure](https://dictionary.cambridge.org/dictionary/english/structure) and [behaviour](https://dictionary.cambridge.org/dictionary/english/behavior) of the [natural](https://dictionary.cambridge.org/dictionary/english/natural) and [physical](https://dictionary.cambridge.org/dictionary/english/physical) [world](https://dictionary.cambridge.org/dictionary/english/world), or [knowledge](https://dictionary.cambridge.org/dictionary/english/knowledge) [obtained](https://dictionary.cambridge.org/dictionary/english/obtain) about the [world](https://dictionary.cambridge.org/dictionary/english/world) by [watching](https://dictionary.cambridge.org/dictionary/english/watch) it [carefully](https://dictionary.cambridge.org/dictionary/english/carefully) and [experimenting](https://dictionary.cambridge.org/dictionary/english/experiment)’

<https://dictionary.cambridge.org/dictionary/english/science>

and Science is ‘concerned to explore and understand what is, designers and technologists are concerned with what might be’

National Curriculum Design and Technology Working Group – Interim Report 1988 DfE

**What is Art?**

Art is defined as:

‘creating visual, auditory or performing artifacts (artworks), expressing the author’s imaginative, conceptual ideas, or technical skill, intended to be appreciated for their beauty or emotional power.’

modernsculprureartists.com

This does not exclude the fact that DT can not only feed off other subjects, but also it can contribute to them as well, offering a very different insight and understanding of their nature. However, Design & Technology still has its own identity and value.

**Summary**

Science is Understanding

Art is Expression

Design & Technology is Application

* Design and Technology is Application and Realisation
* Realisation to a purposeful outcome
* Purposeful, whether aesthetic, functional or a combination.
* Where outcomes are either products, environments or systems

Design’s Relationship to Technology

You may have noticed there is little mention of Technology and the theory/knowledge content required. This is explained succinctly by the quote below:

‘The design process underpins everything. All the theory is in support of design processes and to provide the skills to realise design intentions as prototype outcomes. I believe this is often where the teaching of D&T goes wrong, when the teaching of a craft or technical skills becomes the focus rather than its purpose in simply realising outcomes.’

Paul Woodward 2020

This notion has been echoed throughout this document, and at the heart of the course being outlined. Changes in technology have been immense over the last few decades, so teachers need to be aware, ensuring balance, and embracing whatever new technology emerges to support theirs and their student’s work, but not drive it.