

## Design & Technology St Osmund's Middle School

This document is designed to give you an overview of Design Technology at St Osmund's in terms of expectations and routines, the curriculum intent, implementation and impact and guidance on possible questions during a monitoring visit.

### **Clarification**

In KS2 students will work within each of the three Design Technology specialism; Food and Nutrition, Textiles and Resistant Materials (STEM is experienced through all 3 specialisms). Students remain with their teacher and the teacher delivers lessons in all three areas. KS2 lessons are an hour and the lesson begins with 'design of the week' (DNA – Do now activity). Teachers and students follow the department Health and Safety policies, in accordance with the BSI for DT classrooms and practical activities. Through the MAT, there is a collaboration of schools in the area, in which a spiral curriculum is developed. The knowledge is built from what students have discovered in year 4 and there is a clear expectation of what is required for year 5 learners at St Osmund's. Close communication with the feeder schools, enables the building of composite skills to engineer success for every student.

In KS3 Students would be expected to work in a secondary school setting. Students will experience three areas of Design Technology; Food and nutrition, Resistant Materials and Textiles. Students will rotate to different specialisms in small groups of 20 (in accordance with the Design Technology Health and Safety policy). Students will experience double lessons, to achieve more opportunity for 'iteration' in their design process at KS3. In order for the students in year 7&8 to understand that they are now starting to study the subject at KS3 and will be looking at more design problems, Product Analysis will be taught and students will be introduced to the technical term 'iteration' which will aid the transition to GCSE. Students will work in an iterative way, so that they are well practised of this way of learning before KS4. All students must also be aware that the subject is compulsory at year 9 in our main feeder school: Thomas Hardy School. It is our job in the middle school to ensure that the students arrive at THS with extensive prior knowledge and skills needed for GCSE and beyond. The department leader has been liaising with Simon Patel at THS to ensure a smooth transition and key prior knowledge is covered particularly focussing on KS3.

### **Expectations and Routines**

#### **During Lessons:**

- ✓ Students will be given a Design Technology workbook. They will complete the daily tasks in the booklet.
- ✓ DNA activities will be subject specific and the DT staff will compile power-point presentations with the DNA for each lesson.
- ✓ DNA activities for Practical lessons will differ and be focussed on gathering the correct equipment and have clear expectations of the practical task, given that year 5 & 6 have only an hour to cook in food.
- ✓ Focus on presentation and key vocabulary (Key Vocabulary mats are available for each specialism and Knowledge organisers with Key Vocabulary is in the work books)

- ✓ Presentation Promise is available in the workbook, to enable students to see the expectation for written communication
- ✓ Each lesson will include a recap of the students learning, using effective questioning to stretch the students thinking (quick retrieval questioning).
- ✓ Learning Objectives are clear and explained within the introduction to the lesson.
- ✓ When demonstrations are shown, students will engage in an extensive Q&A session to further their thinking with extended questions (metacognition)
- ✓ Students will record key information from the demonstration in their learning booklets, to ensure that they have the necessary information to complete the task. This is vital for year 7&8 as a two week period will have passed before they can carry out the manufacture/make activity.
- ✓ A 'top tip' box in the booklets is also included on the demonstration pages, so that students can write notes about their 'top tips' This will also be discussed in a plenary session.
- ✓ If a **practical lesson**, students will have a clear instruction of the task, the Learning Objectives will be displayed on the board and a brief recap of the process will take place. Health and Safety will be the main focus and students will be able to independently complete the making task. If students need reminding of the task, they will be reminded and a consistent pace will ensure the lessons move forward. The visualiser will be used to show delicate operations and to model any assessment or key written work/designs
- ✓ Students will have the opportunity to peer assess in small focus groups in the Testing and Evaluation of the product.

### **Product Analysis Tasks**

- ✓ Students will be given key information to ensure that they can complete the task and understand how products work. Students will understand the acronym ACCESS FM when focussing on product Analysis.

### **Assessment**

- ✓ Students will reflect on their own learning and use DIRT time to improve and add further targets. This will be done in a purple pen.
- ✓ Students will have an opportunity to peer assess, in the learning booklets (dedicated peer assessment spaces on the page) Key guidelines and Vocabulary mats will be available for this.
- ✓ Once per half term, students will be given Key DT words to learn, this is in accordance with the school's tiered vocabulary and will be subject specific.
- ✓ Targeted questioning
- ✓ Regular routine quizzes, and exercises to build memory.
- ✓ Live marking and use of a visualiser
- ✓ Whole Class feedback
- ✓ Peer and self-assessment
- ✓ Use of **Knowledge Organisers** for recall and revision (these will soon be redesigned to enable SEND to use them effectively in accordance with the school SEND policy)

- ✓ SLT meetings and learning walks are scheduled to complete book scrutiny and to moderate assessment tasks

#### **Curriculum Development:**

- ✓ The SL has worked to develop the DT curriculum in line with whole school expectations and to formulate a plan to support students transitioning to THS, working alongside the MAT schools.
- ✓ The SL has developed a new rotation system mirroring that of a secondary school, to prepare students for working with multi skilled teachers in the three dedicated areas of DT: Resistant Materials, Textiles and Food/Nutrition.
- ✓ Meetings with the other middle schools will promote the sharing of good practice.
- ✓ Meetings with first schools (feeder) to ensure there is a clear expectation for year 5 learners and to support them with the DT spiral curriculum.

#### **Curriculum Intent:**

##### **Subject design**

## **Design Technology Curriculum Statement**

*Sustainable development is defined as development that "meets the needs of the present without compromising the ability of future generations to meet their own needs."*

*Sustainable design is also called "environmental **design**" and "environmentally-conscious **design**." No matter what it is called, this kind of a **design** is just as much a philosophy as it is a practice. It is based on economic, ecological, and social principles regarding the importance of sustainability.*

**There is no future without a sustainable present. We aim to instill into our young designers that planned obsolescence is no longer an option. That sustainable, reusable, recycled and rediscovered design is the only way to preserve our future and that of the generations to follow.**

#### **Intent**

"Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range

of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art.” (DfE, 2013)

Design, Technology have a rich cultural heritage in this country and remain a vital industry for our economic success. We remain world leaders across Design and Engineering sectors, and the Industries contribute significantly to the national, and local, economies. Through our rich and varied curriculum, pupils will enjoy positive experiences and learn how to take risks, becoming resourceful and innovative while developing their confidence and resilience through creative problem solving. They will learn to critically evaluate products and technology and to understand how it impacts on our lives, society and the world as a whole.

### Students will learn to:

- Develop the creative, technical and practical expertise needed to participate in, and contribute to, an increasingly technological world
- Apply recognised approaches to product design to ensure effective and efficient working practices.
- Build and apply a repertoire of knowledge in order to design and make high-quality prototypes and products for a variety of users, and in a variety of materials, considering their needs and the needs of the environment.
- Test and evaluate their ideas and products and the work of others, critically and develop resilience and perseverance to overcome problems
- Understand and apply the principles of nutrition and learn how to cook.

	TERM 1.1		TERM 1.2		TERM 2.1		TERM 2.2		TERM 3.1		TERM 3.2	
YEAR 5	1	ATL INTERIM LEVEL	1	FINAL LEVEL	2	ATL INTERIM LEVEL	2	FINAL LEVEL	3	ATL INTERIM LEVEL	3	FINAL LEVEL
	Baseline TEST 1											
YEAR 6	4			FINAL LEVEL	5			FINAL LEVEL	6			FINAL LEVEL
	Baseline TEST 1	ATL INTERIM LEVEL				ATL INTERIM LEVEL				ATL INTERIM LEVEL		
YEAR 7	7				8			9				
	Baseline Test 1	ATL Interim level	IN LEARNING BOOKLET	Final Level	AFL Interim level	IN LEARNING BOOKLET	Final Level	ATL Interim level	IN LEARNING BOOKLET:		Final end of year level	
YEAR 8	10				11			12				
	Baseline Test 1	ATL Interim level	IN LEARNING BOOKLET:	Final Level	ATL Interim level	IN LEARNING BOOKLET	Final Level	ATL Interim level	IN LEARNING BOOKLET:		Transition	

## **Progression through the curriculum**

The curriculum is being adapted through the use of new resources to ensure that it is rigorous in all areas. The whole curriculum has been reviewed to ensure greater depth in knowledge and understanding. There will be a clear focus on Designers (that are in the GCSE specification) that will allow students to discover Industrial processes and Key Vocabulary. Throughout KS2 and KS3, students will investigate the work of others through Product analysis, analysing first hand products and suggesting design improvements. Students will be introduced to an 'iterative approach' which is vital for the preparation of GCSE Design Technology. Students will understand the importance of Re-Designing a product and how this is important in everyday objects (linking to planned obsolescence). The KS3 units include the challenge of GCSE standard work. All of the year 7 & 8 Schemes of Work are designed to meet the new specification GCSE standards and encourage stretch and challenge. Students will obtain vital skills in the manufacture of demanding products

The curriculum includes regular opportunities to assess student progress. It is designed to build skills and knowledge and to recall previous knowledge to maintain progress in all aspects DT.

Success is a cohort of students who gain knowledge on a Design Technology journey of skills, Testing and Evaluation. Looking at the wider technological world and how we can become future designers using sustainable resources? It is important to educate students to investigate the problems that evolve with products and to discover solutions for the ever changing world.

To create independent 'thinkers' and 'problem solvers' who ask why and how? Will be a key focus in Design Technology.

### ***Exceeding expectations of progress.***

Knowledge Organisers and **Key Skills sheets** are a valuable tool for regular home and class learning which are based on recall. Home learning challenges are also available for students.

## **Curriculum Implementation**

### **Equality of opportunity:**

The curriculum has been carefully designed in line with DATA and the preparation for GCSE, it can be accessed by all learners. SEND students are supported with literacy, where necessary, to ensure that they meet the same curricular goals confidently and successfully. **Knowledge Organisers** have proven to be a useful tool to help all students. Lessons will be differentiated and students will be identified on the teacher's class clipboard, highlighting important information, such as SEND, PP and More Able students. Information for each lesson will be in the students' booklets and additional sheets will be available to allow all students to access the curriculum. Key words, will be available around each specialist room and on mats for each table when accessing written work.

To ensure excellent implementation we endeavour to keep all our teaching materials up to date and relevant, for example the SL has just ordered a heat press to bring the Textiles area up to date

with Computer Aided design and Manufacture. The SL will also train staff how to use the complex Textiles machinery that is available. Regular updates will be investigated through the DATA websites and the links the SL has with Technology department through the Design Technology forum.

The Design Technology rotation (as per table) will enable all students to access all the specialisms throughout their journey through St Osmund's and further to THS. Keeping staff in their specialism in KS3, will enable students to have a wider and in-depth understanding of that specialism, as staff will be able to fine-tune areas that work and improve areas that do not work as well. Projects will be able to be reviewed, if certain elements need reviewing.

The SL has extensive knowledge of Design Technology GCSE and A-Level, so she will be able to implement key processes and knowledge to support students and their transition to THS.

### **Curriculum Impact:**

- **Ensuring student progression**

Student's knowledge of Design Technology will grow through their journey from year 5 to year 8. Students will be introduced to key theory vocabulary and processes. The work of other Designers will be introduced and visual information relating to current and past Designers will be on display. Through practical lessons, students will problem solve and create solutions, to complex design situations.

Underperforming students are identified in each class. Subject teachers offer support, which is mainly in class along with peer support which is evident in seating plans. Task planners and scaffolding within lessons, will enable these students to move forward.

- **Additional opportunities to learn**

The SL will organise Design Technology clubs after school, particularly in the area of Textiles. Students will also have access to the Half Termly Design Challenge and be able to create through discovery. The SL will investigate the possible extended learning opportunities by visiting the Victoria and Albert museum/Design Museum (when circumstances allow).

### **Possible Questions:**

- 1. How does your department plan for progression?**

Students will rotate to the three key areas of Design Technology. Following an astringent Scheme of Work, students will be able to cover the requirements for Key Stage 2 and 3, being fully prepared for Key Stage 4. Students will have extensive knowledge and skills, and will problem solve to become independent thinkers. New and exciting projects will be introduced, exposing students to new technologies and techniques. Possible links with industry will be made through 'designing for a real situation' will be investigated.

Students will be tested at the beginning of the year through a 'baseline' project, to ascertain a baseline grade in which to use, to predict a target for the individual student. The baseline will be recorded and a target of two grades above will be created to allow for progression at the end of

each Key Stage (a target for the end of Key Stage 2/3). This is in accordance with the government guidelines and will allow a flightpath prediction for THS.

## **2. Does the department consider the 'curriculum as the progression model'? (Progress through 'knowing more and remembering more')**

In DT we will constantly check the students have understood the curriculum throughout the 4 years. We aim to make the knowledge '*sticky*' by inter-weaving concepts and interlinking concepts through the curriculum, for example when we look at how products work, through product analysis, we can investigate the products through physically seeing them and working out how they function. To enhance this, students can see how they are made and if they are successful? We can then link this discovery to the manufacture of their own products and the Testing/Evaluation at the end of a cycle? Can the product be redesigned? Can it become sustainable? We look at making connections to everyday living, which in itself can promote design questions and problems?

Gained knowledge will be checked through regular 'quizzes' and recall at the end of each lesson. This will allow for students to access the key terms in Design Technology through literacy. Students will be given a grade at the end of each term, in accordance with the schools Assessment Policy. It is important that these are recorded, to enable a clear visual map of the students' overall progress – however, students can sometimes be successful in one specialist area and not so confident in another, so possible dips in attainment are to be observed when students have moved to a different specialism.

## **3. How do you ensure students are challenged?**

The challenge of learning should be judged over time (not by what goes on in an individual lesson) by considering the curricular goals. The SL is very keen to develop all students' literacy and to ensure that the students enter KS4 with outstanding vocabulary and technical skills, together with the ability to problem solve. The students are also constantly challenged in their thinking by looking at complex design situations and real time problems, such as designing for the schools nature areas (making bug hotels). It can be very demanding for students to recognise that there is such a need for design in real life situations and the requirements that need to be considered, together with the restrictions and limitations. Students will understand real time designing and working with others to ensure they have met all of the criteria in the challenge.

## **4. What is the rationale for the specific content chosen?**

Our strong DT curriculum which has been worked on as part of the MAT consortium ensures a consistency of topics are being taught by the 3 middle schools in the local area. The subject leaders meet up and discuss how the curriculum is planned and make changes where appropriate. For example, at the start of March 2019 at a MAT meeting THS requested that the students were introduced to Product Analysis and the work of other designers. There will now be regular Product Analysis lessons for students and a 'Design of the week' activity will be updated to support this.

Another request from THS was to introduce key technical vocabulary and technical knowledge (in accordance with the new GCSE) which are in the learning booklets. Each project has been designed to challenge students. As a former GCSE and A Level teacher the SL is aware of what is expected in the new GCSE and A Level specifications. The students are empowered and recognise the validity of the subject when they feel that they are making progress and are well prepared for the GCSE course that will be starting straight away when they go to upper school.

### **5. What rationale does your department have for the order in which content is being taught?**

Staff will follow the Design Technology rotation and will meet with the SL on a regular basis. The key information of each group will be on a class clipboard and the SL will monitor this closely to see that all information including seating plans have been created by the member of staff.

Projects and SOW will be organised by the SL, however if the subject teacher wishes to add their own ideas to the project, this will be welcomed with the whole team approach. The projects will be reviewed and amended where cost is high or results are not meeting the required expectations.

Projects will be as follows:

#### **September 2024:**

##### **Year 5:**

**BENCHMARK PROJECT:** creating a Gyrocopter.

**Food:** Healthy me

**Textiles:** Felt bookmark

**Resistant Materials:** Bridges and structures

##### **Year 6:**

**BENCHMARK PROJECT:** Creating a Gyrocopter.

**Food:** Funky Fruit

**Textiles:** Phone case

**Resistant Materials:** photo frames

##### **Year 7:**

**BENCHMARK PROJECT:** Design and create a zoetrope.

**Food:** Veggie Heaven

**Textiles:** Pencil cases

**Resistant Materials:** Bug hotels

## **Year 8:**

**BENCHMARK PROJECT:** Design and create a zoetrope.

**Food:** Food through the ages

**Textiles:** T-Shirt Project

**Resistant Materials:** Acrylic Clock

Each project will run for a whole term and the KS3 groups will move to different teachers, so that they experience different teachers throughout the carousel. The teacher will remain teaching in a 'specialism' and we will work with teachers whose strengths are in that specialism.

In KS2 the groups will remain with their teacher, but move to each of the specialist rooms, to allow for a more nurturing/primary approach.

Students will work in booklets

Students in KS3 will have Design Technology once per fortnight (double lesson) and will complete a practical lesson every second lesson where possible. This will be problematic in food with regards to the two week period between demonstration and practical completed by the students, however a brief re-cap will be given at the beginning of each practical. If students make excellent progress in the Textiles and Resistant Materials areas, students may be able to complete the practical in most lessons.

Students in KS2 will have an hour lesson once per fortnight, and in Food & Nutrition the group will be split into 15 to complete a practical. Students not cooking, will complete work in their booklets, with the support of a TA/technician.

Student numbers have been agreed for September 2024 and these will be 20 in each class throughout KS3 to allow for Health and Safety and in accordance with government guidelines.

In KS2, class sizes will be 30, the teacher will make informed decisions regarding the Health and safety, and only allow a small number of students to use the machines at any one time on a rotational basis. This will allow the students to experience using the equipment, with a thorough assessment to risk, being taken into account.

### **6. How does the department develop students' written work?**

There are regular opportunities for writing outlined in SOWs and are evident in student booklets. It is important that all students note down new specialist vocabulary for each topic and these will be learned in the timescale given. The SL has met with the SL for English, to create a 'presentation promise' sheet in the front of the booklets, this will allow the students to understand the expectations, which will be clear and part of the whole school process. Literacy mats and sentence starters are available and mini white boards can be used to assist students with the correct vocabulary.

### **7. How do you ensure that key content is remembered over time?**

The Design Technology Department will use key questioning and metacognition in its approach to ensuring the key content 'sticks'. Regular assessment will enable the students to recall what they have learned. It is important to remember that in Design Technology, the importance of problem solving and remembering key skills together with technical vocabulary will be embedded through kinaesthetic learning.

### **8. What is your rationale for the activities chosen in lessons?**

Explain that the activities chosen have been made based on the curricular intent.

The activities/projects have been chosen, to deliver the National Curriculum to Key Stage 2&3 and to prepare students for GCSE and beyond.

The projects are designed to stretch the students' learning and to develop their skills, knowledge and understanding. The department will deliver a slightly new way of learning through the rotation system and through successful projects of previous years and new projects, students will have a good all round experience of Design Technology, fully preparing them for their GCSE. There has been an extensive shift to learning booklets in KS3 and this will be continued, with a few additions, to enable students understanding of the key vocabulary and Technical knowledge.

Following guidelines, it is important that students become independent learners, with the ability to solve real existing problems through design. They will need to understand about the environment and obsolescence/planned obsolescence. It is vital that through Design and Technology, students view the world around them with different eyes, looking at how things work and how they are made. Are products fit for purpose? Can products be redesigned or up-cycled? All of these extensive topics will be covered through the delivery of the DT Programme of Study.

New resources will be created, to assist the delivery of projects and the technical knowledge. Key words will be displayed and acronyms (posters) will be displayed. Students work will be on display and photographic evidence of each product will be kept, to evaluate projects and to assist with standardisation.

### **9. How does the department revise with the students?**

The SL has completed new skills and vocabulary lists to be used alongside *Knowledge Organisers* to consolidate knowledge and ensure that it is sticky. The department will share with the children especially in year 7 & 8, model answers and we will ask students to annotate their work looking closely at where they are gaining marks. We will also ask students to peer assess work and look at how things can be improved. DIRT time will be allocated, to ensure that students understand how they might be able to improve and the importance of reviewing their own work, setting individual targets. Students can use the assessment sheets at the front of their booklets, to see where they can improve and how. The visualiser will also be used to model good practice.

### **10. What is the rationale for your assessment approach?**

The students will be assessed once per term, an 'approach to learning' grade (ATL) will be given each half term and sent home to parents/guardians. Literacy will be assessed in 'quick' end of lesson quizzes and recall. This will help the teacher keep a paper trail of evidence for the student's assessment, thus highlighting if there is an issue with regards to practical skills, written work or technical knowledge. The students will be assessed in detail at the end of each project after approximately 12 weeks in the subject specialism. This will be three times per year and will be compared to the Benchmark grade to see if the student has progressed? The target will be available for each member of staff to evaluate how that student has performed and where the weaker areas are (this timeline complies with the school's assessment policy).

*It is worth noting that students in DT do not always progress in line with other subjects. Their skills may be better in one specialism than another, and therefore, the importance of looking at their understanding and knowledge is paramount.*

### **11. How does your department ensure there are high expectations for students?**

The department have very high expectations for all students and this is shared with all students at the start of the year in our classroom expectations and the students are consistently reminded of this throughout the year. Students are shown exemplary work and reminded of the departments Health and Safety for each of the three workshops. In each workbook, there will be a 'presentation promise' in accordance with the schools policy, to ensure that students understand the importance of presenting their work accurately. Exemplar work will be modelled and shown live via a visualiser.

The subject area works very hard to develop excellent relationships with all the students giving them the opportunity to express their ideas. If a student hands in a low standard of work, they will be encouraged to improve this using iteration and will be shown how to reach a higher standard. The Design Technology Curriculum regularly encourages the use of iteration, analysing work to improve or modify (the idea that you go forwards and backwards throughout the process). For more able students, key testing and evaluation processes will be encourage.

### **12. What are the processes of curriculum construction in your subject?**

The KS2 and KS3 curriculum has been revised this year in consultation with changing MAT priorities and the other middle school SLs.

### **13. In what ways is the quality of the curriculum assured?**

Individual feedback, learning walks and book scrutiny will highlight good practice and generate individual targets. Subject area meetings will be used to discuss pedagogy and to share good practice. Careful moderating and standardisation of products, using baseline data, will help to identify any inequalities in reaching curricular goals. Regular training of staff will allow them to access the complex machinery and equipment.

### **14. How do you support inexperienced and non-specialist staff?**

The schemes of Work have been fully resourced by the SL and the technician and they are continually reviewed. They are detailed and will be available in the school shared area. The subject leader is very happy to be sent other ideas and materials and is constantly looking for new ideas to incorporate into the POS. Power points will be available for non-specialist staff and the Technician is on hand to assist where needed. All non-specialist staff must be trained with specialist machinery and all staff must have completed a Health and Safety training course accredited by DATA. Where this is not possible, staff must only operate machinery they have been sanctioned to use and the SL will ensure that training is kept up to date.

As the projects go through the rotation, the member of staff will record changes/improvements to the SOW and review them at the end of the cycle. New resources are incorporated into the appropriate lesson for others to use. Staff are encouraged to email or arrange to meet the SL to discuss a lesson or sequence of lessons that they need support with; advice and additional resources are given where necessary. Subject area meetings are used primarily to discuss the curriculum.