**Design & Technology Year 9**

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|  | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| Topics | **Living in a Box**  Affordable living spaces | **The Great British Make Off Project** | **Prototyping Project – Pizza Cutter**  Identifying target markets  Writing a specification  Initial ideas and modelling of ideas | **Bridge Building Project**  Planning the manufacture of a product  Making several components to be assembled | **Mechanisms Project / Crumble programming project**  Using digital technology to design and create products | **Pewter Casting Project**  Manufacturing using polymers and jigs |
| Assessment | Ongoing formative assessment in lessons  End of Project summative assessment | Assessment of practical skills and H&S knowledge | Assessment of creative and designing skills | Assessment of making and evaluating skills  Technical knowledge test | Assessment of iterative approach to designing  End of project summative assessment | End of year written assessment |

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| Building on Prior Learning | Students build on the skills and knowledge from Year 8 by tackling more challenging projects using a wide variety of materials, processes and technical knowledge. The projects in Year 9 encourage students to use their prior learning with a more independent approach. |
| Links with other subjects | This subject links with Art (sketching and creative skills), Business (income, economy, industry) Science (biomimicry, investigations, properties of materials, energy, forces and electronics – remember technology is the appliance of science!), English (annotation, evaluation, instructional and descriptive language, literacy links, extended writing), Geography (designing solutions to global issues such as climate change, ethical sourcing of materials, energy production), History (industrial revolution, inventions that changed the world), ICT (word processing, research, graphs, data processing, programming and CADCAM – computer aided design and computer aided manufacture), Maths (weights and measures, quantities, costings, graphs, analysis of data, geometry) |
| Extracurricular opportunities | Students are able to participate in after school D&T clubs including the exciting Vex IQ Robotics Club. In Year 9 students can enter a team in the national competition. On Tuesday Evenings students can continue to develop their class projects at our KS3 D&T Club. On Friday students can spend time in the department making products for the Duke of Edinburgh Award skills component. |
| A successful learner in this subject will demonstrate | There are four strands in D&T; **designing, making, technical knowledge and evaluating**. When **designing** a successful learner will be aware of target markets and social, moral, environmental and sustainability issues, analyse existing products, research design influences, create a design specification, generate variety of feasible design ideas, use scale models/CAD/sketching to develop ideas through a sequence of iterations. When **making** a successful learner will be able to assemble, make and finish demanding products, demonstrating skills in using a wide variety of equipment and materials including CAM as well as applying quality control during manufacture. In **evaluating** designs and final products, a successful learner will use a range of appropriate testing techniques to ascertain the commercial viability of the design. **Technical knowledge** will be in evidence throughout the other three strands and the student should be able to prepare detailed instructions that could be used by a third party to manufacture a design. |
| Impact on personal development | Design and Technology opens up a wide range of opportunities to explore a range of issues from the world around us. Students are encouraged to work together to complete their projects and to share resources. Designing for others also develops empathy and they are encouraged to be mindful of the products they create and the impact they have on society from a moral and ethical perspective. Sustainable production and environmentally conscious design are at the heart of the subject. |

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| Ways to support student learning in this subject |
| * Trips to interactive museums (e.g THINK Tank, National Transport Museum in Gaydon, V&A, Ironbridge, Science Museum, RAF Cosford) can inspire the budding designers, inventors and engineers of tomorrow. * Students are encouraged to keep sketch books, take photographs and collect examples of innovative and creative designs. * There are many free software programs that students can download or access online to develop their CADCAM skills. These include Sketchup, Autodesk Fusion 360, Autodesk Inventor and Blender. Many students have designed products at home and then had them manufactured on the school’s 3D Printer. * Look out for any design and creative competitions on TV, radio, or in the newspaper – these can be a fantastic way to get excited about designing and creating! Several DSHS students have found success in competitions, winning prizes and enhancing career prospects. * Programs like ‘How It’s Made?’ and ‘The Gadget Show’ introduce students to a range of innovative products and improve their understanding of how our world is made. * Students are encouraged to read books, magazines (Wired) and articles about design and innovative products on-line (Dezeen, Design Boom, Interesting Engineering) * When completing homework tasks ‘go the extra mile’ and thoroughly research the topic areas, practice making models in 3D from resources found at home including card and Lego. * Students are encouraged to enjoy and have fun in Design and Technology * Students should be encouraged to make mistakes and learn from them. |

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| **In the event of a Rota – Tier 2 -** A combination of onsite + remote delivery / Vulnerable groups and children of critical workers in all year groups full time as normal |
| * Students will continue to follow the scheduled long-term planning / When students are in school new content will be covered ready for the next remote learning session on the rota. On the occasion that the curriculum delivery plan needs to be amended due to topic being more challenging / easier to teach in person or longer school closure than anticipated the order of delivery may change, ensuring skipped content is taught at a later date. * When students are learning remotely they will have one live lesson per week on MS Teams. The lessons and sessions will be as per school timetable, where possible. The second lesson will be an opportunity for the student to carry out design and modelling tasks. * Live lessons will cover new and familiar topics or the setting of a design task. During these lessons the teacher will ascertain student’s knowledge base, identify and support misconceptions and guide through the curriculum content providing brief formative verbal feedback. * Tasks and relevant information will be available for students at: <https://droitwichspahighschool4005.sharepoint.com/sites/DSHS.DT/SitePages/Year-9-D%26T-Remote-Learning.aspx> and students are able to find out more about D&T with use of the online school subject pages at: <https://droitwichspahighschool4005.sharepoint.com/sites/DSHS.DT/SitePages/Year-9-Design-&-Technology.aspx> as well as at specific websites such as: <https://www.technologystudent.com/> and resources at Focus eLearning (link on our subject page) or at <https://www.focuselearning.co.uk/u/1071/DahBlgxqqaxEBkpydvvlnakdbimdzlhwm> * Students will be expected to complete all tasks / activities and homework set. Work can be submitted via ePraise, MS Teams or in pdf form direct to teachers email. Only in cases of no ICT access at home can work be brought into school during scheduled face to face lessons. * For all submitted work on ePraise, MS Teams (preferred submission method) and email, students will receive brief written formative feedback. * All live lessons will be recorded on MS Teams, enabling students to access the lesson if unavailable at the time of delivery. Students will be expected to complete all work set and homework tasks for that lesson. * The teacher will be available on MS Teams / email for all live sessions, where possible. * When in school, students will attend lessons as per ‘normal’ and teacher will recap on live lesson and independent session content to ensure full understanding of topic(s) covered. Students who have defaulted on work and homework submissions will be verbally addressed by their teacher in the first instance. |
| **In the event of a partial closure – Tier 3 -** Selected Year groups in school (as determined by DfE – likely Y11/13) / Vulnerable groups and children of critical workers in all year groups full time as normal |
| * Students will continue to follow the scheduled long-term planning / When students are in school new content will be covered ready for the next remote learning session on the rota. On the occasion that the curriculum delivery plan needs to be amended due to topic being more challenging / easier to teach in person or longer school closure than anticipated the order of delivery may change, ensuring skipped content is taught at a later date. * When students are learning remotely they will have one live lesson per week on MS Teams. The lessons and sessions will be as per school timetable, where possible. The second lesson will be an opportunity for the student to carry out design and modelling tasks. * Live lessons will cover new and familiar topics or the setting of a design task. During these lessons the teacher will ascertain student’s knowledge base, identify and support misconceptions and guide through the curriculum content providing brief formative verbal feedback. * Tasks and relevant information will be available for students at: <https://droitwichspahighschool4005.sharepoint.com/sites/DSHS.DT/SitePages/Year-9-D%26T-Remote-Learning.aspx> and students are able to find out more about D&T with use of the online school subject pages at: <https://droitwichspahighschool4005.sharepoint.com/sites/DSHS.DT/SitePages/Year-9-Design-&-Technology.aspx> as well as at specific websites such as: <https://www.technologystudent.com/> and resources at Focus eLearning (link on our subject page) or at <https://www.focuselearning.co.uk/u/1071/DahBlgxqqaxEBkpydvvlnakdbimdzlhwm> * Students will be expected to complete all tasks / activities and homework set. Work can be submitted via ePraise, MS Teams or in pdf form direct to teachers email. Only in cases of no ICT access at home can work be posted into school at fortnightly time slots. Work should not physically be brought into reception. The teacher will collect at a convenient time and provide written feedback within the next set of work posted out. * For all submitted work on ePraise, MS Teams (preferred submission method) and email, students will receive brief written formative feedback. * All live lessons will be recorded on MS Teams, enabling students to access the lesson if unavailable at the time of delivery. Students will be expected to complete all work set and homework tasks for that lesson. * The teacher will be available on MS Teams / email for all live sessions, where possible. * Where worksheets / resources are required to be printed to aid students, these will be emailed direct to students at least 24 hours in advance. These will not be essential resources, merely supportive. * The teacher will regularly monitor work and homework submissions. Where work is not readily submitted the teacher will contact home in the first instance. Students who continue to default on work and homework submissions will be flagged up and the HoH and HoD will be notified. * When students return to school the teacher will recap on live lesson and independent session content to ensure full understanding of topic(s) covered. |
| **In the event of a full closure – Tier 4 -** Remote provision for all year groups / Vulnerable groups and children of critical workers in all year groups full time as normal |
| * Students and teaching staff will follow the procedures as for a partial closure in Tier 3 |
| **Adaptations to Topics**   * It is unlikely that the topic schedule will change, however this will be re-evaluated at the time of closure due to exam board review / consultation or staff absence. In the instance of an amendment the HoD will be notified and suitable plans made accordingly. |
| **Threshold Concepts and Skills**   * By the end of the year it is essential that students have learnt / experienced / practiced the following topics / skills to ensure their success moving into year 10: further understanding of 2D & 3D drawing skills, workshop safety, generating and developing ideas through modelling, a basic understanding of the use of CAD and CADCAM, making simple products, structures, mechanisms, the needs of the user, ergonomics and prototypes. |