St Richard Reynolds Catholic High School

SUBJECT: Design Technology YEAR GROUP: 9 **TOPICS COVERED:**	
PROGRAMME OF STUDY	**METHOD OF ASSESSMENT**
Autumn Half Term 1: Vexillology Front Cover & Mushroom Night Light Project **Pupils investigate into why we have National flags and the history of these graphic symbols. They then create a front cover based on the theme of around the world using vibrant colours.** **To help further pupils skills they will take this project on as if they are about to undertake a Mini GCSE project. Pupils will be introduced to combining CAD/CAM facilities (Laser Cutter & Vinyl Cutter) with Resistant Material knowledge. They will be given the opportunity to create a Mushroom Night Light. To start pupils will be given a list of requirements that they will need to formulate together to create a Design Brief. Research will focus on components, the client, materials, and the machines and tool that they will use. Pupils will then construct a specification and create a selection of design ideas that can be incorporated into the design. Pupils will finish this project by learning about how to wire a mains plug and building and incorporating the circuit board into the design.**	**Assessment of Practical Work** **End of Unit Theory Assessment**
Autumn Half Term 2: Mushroom Night Light Practical **Pupils start to make the mushroom night light using Hegner saws, Belt Sanders, Coping Saws, Vices, Hand Files, and Pillar Drills. Pupils have to construct the circuit board from scratch and will use soldering irons to construct there circuit board. They also need to complete an exercise using Cubify Invent software to create the base of the lamp shade to be 3D printed. Pupils will make the lid of the night light using a vacuum forming machine. They will then use ICT to create the vinyl stickers to decorate the lid.**	**Ongoing Skills Assessment**
Spring Half Term 3: Cooking & Nutrition Healthy Eating **This scheme of work has been developed to enable pupils to learn where food comes from, how to cook a range of dishes safely and hygienically and to apply their knowledge of healthy eating. Pupils will develop their knowledge and understanding of ingredients and healthy eating. They will develop food preparation and cooking techniques and develop their knowledge of consumer food and drink choice. Pupils will be able to apply their knowledge to make informed choices and develop the creative, technical and practical expertise needed to perform everyday tasks confidently. Pupils will build and apply a repertoire of knowledge, understanding and skills in order to design and make high quality products for a wide range of users. Pupils will also evaluate and test their ideas and products and the work of others.**	**Assessment of Practical Work** **End of Unit Theory Assessment**
Spring Half Term 4: Cooking & Nutrition Healthy Eating **This scheme of work has been developed to enable pupils to learn where food comes from, how to cook a range of dishes safely and hygienically and to apply their knowledge of healthy eating. Pupils will develop their knowledge and understanding of ingredients and healthy eating. They will develop food preparation and cooking techniques and develop their knowledge of consumer food and drink choice. Pupils will be able to apply their knowledge to make informed choices and develop the creative, technical and practical expertise needed to perform everyday tasks confidently. Pupils will build and apply a repertoire of knowledge, understanding and skills in order to design and make high quality products for a wide range of users. Pupils will also evaluate and test their ideas and products and the work of others.**	**Assessment of Practical Work** **End of Unit Theory Assessment**
Summer Half Term 5: Sphero Design Challenge **Pupils will develop there drawing skills and how to use specialist drawing media to create and present design ideas. Pupils will use ICT to programme a Sphero ball round a maze design. The maze design will have a series of obstacles that they will be challenged to overcome. Pupils will be tasked with designing the obstacles to be implemented into the maze. Pupils will design and make these obstacles using Cubify Invent software. To teach them they will be asked to complete a series of tasks, so that they can learn the basics first of 3D design.**	**Ongoing Skills Assessment**
Summer Half Term 6: Sphero Design Challenge & Smart Materials in Design **Pupils will continue with the Sphero project and develop there obstacles. They will be introduced to Smart Materials and what Smart Materials are, looking at Smart Ink, Polycaprolactone, Self-Healing Materials, Magnetic Shape Memory and Chromogenic Systems. Pupils will experiment with each one and develop an understanding of how these can be used within for industrial purposes.**	**Assessment of Practical Work** **End of Unit Theory Assessment**

Key Skills:

- **The history of Vexillology in the graphic design of Flags**
- **The advantages of CAD/CAM using 2D Design alongside a Vinyl Cutter and Laser Cutter**
- **The basics of using 2D Design software to create designs**
- **Using Cubify Invent to create 3D Designs**
- **Learn ow to identify key aspects to be considered within the design of an object following a client specification.**
- **How to use a Vacuum Forming Machine to create a Dome.**
- **Develop Practical skills and learn the differences of the different types of Woods**
- **Develop electrical skills and learn how to connect a mains power supply to the light.**
- **Pupils are taught about energy, nutrients, water and fibre, diet and health and nutritional needs throughout life.**
- **Pupils should consider the function, nutrient profile and sensory attributes of ingredients.**
- **Pupils should study and use a range of food commodities, e.g. cereals, fruit, vegetables, meat, fish, eggs, fats/oils, milk/dairy food products.**
- **They will be introduced to Smart Materials and what Smart Materials are, looking at Smart Ink, Polycaprolactone, Self-Healing Materials, Magnetic Shape Memory and Chromogenic Systems.**
- **Learn about programming components using Sphero Balls**
- **Challenged to resolve and solve problems**
- **Develop electronic skills to wire up an electronic plug**
- **Develop knowledge and how to use different tools and machines**
- **How to use the laser cutter safely and the influences that CAD/CAM has on industrial design and prototyping**