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#### Final version

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### Key Learning in Design and Technology

#### Overview EYFS through to KS2

# HIAS MOODLE+ RESOURCE

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| EYFS Prior Learning in D&T | Textiles – Templates and joining | Food – preparing fruit and vegetables | Mechanisms – Sliders and Leavers | Structures – Freestanding | Mechanisms – Wheels and axles |
|  | • Explored and used different fabrics.  • Cut and joined fabrics with simple techniques.  • Thought about the user and purpose of products. | • Experience of common fruit and vegetables, undertaking sensory activities i.e. appearance taste and smell.  • Experience of cutting soft fruit and vegetables using appropriate utensils. | • Early experiences of working with paper and card to make simple flaps and hinges.  • Experience of simple cutting, shaping and joining skills using scissors, glue, paper fasteners and masking tape. | • Experience of using construction kits to build walls, towers and frameworks.  • Experience of using of basic tools e.g. scissors or hole punches with construction materials e.g. plastic, card.  • Experience of different methods of joining card and paper. | Assembled vehicles with moving wheels using construction kits.  • Explore moving vehicles through play.  • Gained some experience of designing, making and evaluating products for a specified user and purpose.  • Developed some cutting, joining and finishing skills with card. |
| Year 1&2 | Textiles – Templates and joining | Food – preparing fruit and vegetables | Mechanisms – Sliders and Leavers | Structures – Freestanding | Mechanisms – Wheels and axles |
|  | **Designing**  • Design a functional and appealing product for a chosen user and purpose based on simple design criteria.  • Generate, develop, model and communicate their ideas as appropriate through talking, drawing, templates, mock-ups and information and communication technology.  **Making**  • Select from and use a range of tools and equipment to perform practical tasks such as marking out, cutting, joining and finishing.  • Select from and use textiles according to their characteristics.  **Evaluating**  • Explore and evaluate a range of existing textile products relevant to the project being undertaken.  • Evaluate their ideas throughout and their final products against original design criteria.  **Technical knowledge and understanding**  • Understand how simple 3-D textile products are made, using a template to create two identical shapes.  • Understand how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling.  • Explore different finishing techniques e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons.  • Know and use technical vocabulary relevant to the project. | **Designing**  • Design appealing products for a particular user based on simple design criteria.  • Generate initial ideas and design criteria through investigating a variety of fruit and vegetables.  • Communicate these ideas through talk and drawings.  **Making**  • Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely.  • Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product.  **Evaluating**  • Taste and evaluate a range of fruit and vegetables to determine the intended user’s preferences.  • Evaluate ideas and finished products against design criteria, including intended user and purpose.  **Technical knowledge and understanding**  • Understand where a range of fruit and vegetables come from e.g. farmed or grown at home.  • Understand anduse basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of *The eatwell plate*.  • Know and use technical and sensory vocabulary relevant to the project. | **Designing**  • Generate ideas based on simple design criteria and their own experiences, explaining what they could make.  • Develop, model and communicate their ideas through drawings and mock-ups with card and paper.  **Making**  • Plan by suggesting what to do next.  • Select and use tools suitable for the task, explaining their choices, to cut, shape and join paper and card.  • Use simple finishing techniques suitable for the product they are creating.  **Evaluating**  • Explore a range of existing books and everyday products that use simple sliders and levers.  • Evaluate their product by discussing how well it works in relation to the purpose and the user and whether it meets design criteria.  **Technical knowledge and understanding**  • Explore and use sliders and levers.  • Understand that different mechanisms produce different types of movement.  • Know and use technical vocabulary relevant to the project. | **Designing**  • Generate ideas based on simple design criteria and their own experiences, explaining what they could make.  • Develop, model and communicate their ideas through talking, mock-ups and drawings.  **Making**  • Plan by suggesting what to do next.  • Select and use tools, skills and techniques suitable for the task, explaining their choices.  • Select new and reclaimed materials and construction kits to build their structures.  • Use simple finishing techniques suitable for the structure they are creating.  **Evaluating**  • Explore a range of existing freestanding structures in the school and local environment e.g. everyday products and buildings.  • Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria.  **Technical knowledge and understanding**  • Know how to make freestanding structures stronger, stiffer and more stable.  • Know and use technical vocabulary relevant to the project. | **Designing**  • Generate initial ideas and simple design criteria through talking and using own experiences.  • Develop and communicate ideas through drawings and mock-ups.  **Making**  • Select from and use a range of tools and equipment to perform practical tasks such as cutting and joining to allow movement and finishing.  • Select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics.  **Evaluating**  • Explore and evaluate a range of products with wheels and axles.  • Evaluate their ideas throughout and their products against original criteria.  **Technical knowledge and understanding**  • Explore and use wheels, axles and axle holders.  • Distinguish between fixed and freely moving axles.  • Know and use technical vocabulary relevant to the project. |
| Year 3&4 | Textiles – 2D shape to 3D product | Food – Healthy and varied diet | Mechanisms – Leavers and linkages | Structures - Shell | Electrical systems -  Simple circuits and switches |
|  | **Designing**  • Generate realistic ideas through discussion and design criteria for an appealing, functional product fit for purpose and specific user/s.  • Produce annotated sketches, prototypes, final product sketches and pattern pieces.  **Making**  • Plan the main stages of making.  • Select and use a range of appropriate tools with some accuracy e.g. cutting, joining and finishing.  • Select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern.  **Evaluating**  • Investigate a range of 3-D textile products relevant to the project.  • Test their product against the original design criteria and with the intended user.  • Take into account others’ views.  • Understand how a key event/individual has influenced the development of the chosen product and/or fabric.  **Technical knowledge and understanding**  • Know how to strengthen, stiffen and reinforce existing fabrics.  • Understand how to securely join two pieces of fabric together.  • Understand the need for patterns and seam allowances.  • Know and use technical vocabulary relevant to the project. | **Designing**  • Generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose.  • Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas.  **Making**  • Plan the main stages of a recipe, listing ingredients, utensils and equipment.  • Select and use appropriate utensils and equipment to prepare and combine ingredients.  • Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics.  **Evaluating**  • Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs.  • Evaluate the ongoing work and the final product with reference to the design criteria and the views of others.  **Technical knowledge and understanding**  • Know how to use appropriate equipment and utensils to prepare and combine food.  • Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught.  • Know and use relevant technical and sensory vocabulary appropriately. | **Designing**  • Generate realistic ideas and their own design criteria through discussion, focusing on the needs of the user.  • Use annotated sketches and prototypes to develop, model and communicate ideas.  **Making**  • Order the main stages of making.  • Select from and use appropriate tools with some accuracy to cut, shape and join paper and card.  • Select from and use finishing techniques suitable for the product they are creating.  **Evaluating**  • Investigate and analyse books and, where available, other products with lever and linkage mechanisms.  • Evaluate their own products and ideas against criteria and user needs, as they design and make.  **Technical knowledge and understanding**  • Understand and use lever and linkage mechanisms.  • Distinguish between fixed and loose pivots.  • Know and use technical vocabulary relevant to the project. | **Designing**  • Generate realistic ideas and design criteria collaboratively through discussion, focusing on the needs of the user and purpose of the product.  • Develop ideas through the analysis of existing products and use annotated sketches and prototypes to model and communicate ideas.  **Making**  • Order the main stages of making.  • Use appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy.  • Explain their choice of materials according to functional properties and aesthetic qualities.  • Use finishing techniques suitable for the product they are creating.  **Evaluating**  • Investigate and evaluate a range of existing shell structures including the materials, components and techniques that have been used.  • Test and evaluate their own products against design criteria and the intended user and purpose.  **Technical knowledge and understanding**  • Develop and use knowledge of how to construct strong, stiff shell structures.  • Develop and use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes.  • Know and use technical vocabulary relevant to the project. | **Designing**  • Gather information about needs and wants, and develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups.  • Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams.  **Making**  • Order the main stages of making.  • Select from and use tools and equipment to cut, shape, join and finish with some accuracy.  • Select from and use materials and components, including construction materials and electrical components according to their functional properties and aesthetic qualities.  **Evaluating**  • Investigate and analyse a range of existing battery-powered products.  • Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work.  **Technical knowledge and understanding**  • Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers.  • Apply their understanding of computing to program and control their products.  • Know and use technical vocabulary relevant to the project. |
| Year 5&6 | Textiles – Combining different fabric shapes | Food – celebrating culture and seasonality | Mechanisms – Pulleys or gears | Structures - Frame | Electrical systems – more complex switches |
|  | **Designing**  • Generate innovative ideas by carrying out research including surveys, interviews and questionnaires.  • Develop, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes and, where appropriate, computer-aided design.  • Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification.  **Making**  • Produce detailed lists of equipment and fabrics relevant to their tasks.  • Formulate step-by-step plans and, if appropriate, allocate tasks within a team.  • Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost.  **Evaluating**  • Investigate and analyse textile products linked to their final product.  • Compare the final product to the original design specification.  • Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose.  • Consider the views of others to improve their work.  **Technical knowledge and understanding**  • A 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics.  • Fabrics can be strengthened, stiffened and reinforced where appropriate. | **Designing**  • Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification.  • Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose.  • Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas.  **Making**  • Write a step-by-step recipe, including a list of ingredients, equipment and utensils  • Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients.  • Make, decorate and present the food product appropriately for the intended user and purpose.  **Evaluating**  • Carry out sensory evaluations of a range of relevant products and ingredients. Record the evaluations using e.g. tables/graphs/charts such as star diagrams.  • Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements.  • Understand how key chefs have influenced eating habits to promote varied and healthy diets.  **Technical knowledge and understanding**  • Know how to use utensils and equipment including heat sources to prepare and cook food.  • Understand about seasonality in relation to food products and the source of different food products.  • Know and use relevant technical and sensory vocabulary. | **Designing**  • Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources.  • Develop a simple design specification to guide their thinking.  • Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views.  **Making**  • Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team.  • Select from and use a range of tools and equipment to make products that that are accurately assembled and well finished. Work within the constraints of time, resources and cost.  **Evaluating**  • Compare the final product to the original design specification.  • Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose.  • Consider the views of others to improve their work.  • Investigate famous manufacturing and engineering companies relevant to the project.  **Technical knowledge and understanding**  • Understand that mechanical and electrical systems have an input, process and an output.  • Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement.   * Know and use technical vocabulary relevant to the project. | **Designing**  • Carry out research into user needs and existing products, using surveys, interviews, questionnaires and web-based resources.  • Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost.  • Generate, develop and model innovative ideas, through discussion, prototypes and annotated sketches.  **Making**  • Formulate a clear plan, including a step-by-step list of what needs to be done and lists of resources to be used.  • Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks.  • Use finishing and decorative techniques suitable for the product they are designing and making.  **Evaluating**  • Investigate and evaluate a range of existing frame structures.  • Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests.  • Research key events and individuals relevant to frame structures.  **Technical knowledge and understanding**  • Understand how to strengthen, stiffen and reinforce 3-D frameworks.  • Know and use technical vocabulary relevant to the project. | **Designing**  • Use research to develop a design specification for a functional product that responds automatically to changes in the environment. Take account of constraints including time, resources and cost.  • Generate and develop innovative ideas and share and clarify these through discussion.  • Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams.  **Making**  • Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components.  • Competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product.  • Create and modify a computer control program to enable an electrical product to work automatically in response to changes in the environment.  **Evaluating**  • Continually evaluate and modify the working features of the product to match the initial design specification.  • Test the system to demonstrate its effectiveness for the intended user and purpose.  • Investigate famous inventors who developed ground-breaking electrical systems and components.  **Technical knowledge and understanding**  • Understand and use electrical systems in their products.  • Apply their understanding of computing to program, monitor and control their products.  • Know and use technical vocabulary relevant to the project. |

**Overview**

**This document contains…**

Key Learning for progress Design and Technology

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