Tonacliffe Primary School Design and Technology Progression Document – Structures

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| **EYFS**  | Experience of using construction kits to build walls, towers and frameworks.Experience of using of basic tools e.g. scissors orhole punches with construction materials e.g.plastic, card.Experience of different methods of joining card and paper. |
|  | **KS1** | **LKS2** | **UKS2** |
| **Designing**  | Generate ideas based on simple design criteriaand their own experiences, explaining what theycould make.Develop, model and communicate their ideasthrough talking, mock-ups and drawings. | Generate realistic ideas and design criteria collaboratively through discussion, focusing on the needs of the user and the functional and aesthetic purposes of the product. Develop ideas through the analysis of existing shell structures and use computer-aided design to model and communicate ideas. | Carry out research into user needs and existingproducts, using surveys, interviews,questionnaires and web-based resources.Develop a simple design specification to guide thedevelopment of their ideas and products, takingaccount of constraints including time, resourcesand cost.Generate, develop and model innovative ideas,through discussion, prototypes and annotatedsketches. |
| **Making** |  Plan by suggesting what to do next.Select and use tools, skills and techniques suitablefor the task, explaining their choices.Select new and reclaimed materials andconstruction kits to build their structures.Use simple finishing techniques suitable for thestructure they are creating. |  Plan the order of the main stages of making. Select and use appropriate tools and software 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 computer-generated finishing techniques suitable for the product they are creating. | Formulate a clear plan, including a step-by-step listof what needs to be done and lists of resources tobe used. Competently select from and use appropriate toolsto accurately measure, mark out, cut, shape andjoin construction materials to make frameworks.• Use finishing and decorative techniques suitablefor the product they are designing and making. |
| **Evaluating** | Explore a range of existing freestanding structuresin the school and local environment e.g. everydayproducts and buildings. Evaluate their product by discussing how well itworks in relation to the purpose, the user andwhether it meets the original design criteria. | Investigate and evaluate a range of shell structuresincluding the materials, components and techniques that have been used.Test and evaluate their own products against design criteria and the intended user and purpose. |  Investigate and evaluate a range of existing framestructures.Critically evaluate their products against theirdesign specification, intended user and purpose,identifying strengths and areas for development,and carrying out appropriate tests.Research key events and individuals relevant toframe structures. |
| **Technical knowledge and understating**  | Know how to make freestanding structuresstronger, stiffer and more stable. Know and use technical vocabulary relevant to theproject. | Develop and use knowledge of nets of cubes and cuboidsand, where appropriate, more complex 3D shapes. Develop and use knowledge of how to construct strong, stiff shell structures. Know and use technical vocabulary relevant to the project. | Understand how to strengthen, stiffen andreinforce 3-D frameworks. Know and use technical vocabulary relevant to theproject. |
| **Key Vocab** | cut, fold, join, fixstructure, wall, tower,framework, weak, strong,base, top, underneath,side, edge, surface,thinner, thicker, corner,point, straight, curvedmetal, wood, plasticcircle, triangle, square,rectangle, cuboid, cube,cylinderdesign, make, evaluate,user, purpose, ideas,design criteria, product,function |  shell structure, three-dimensional (3-D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating font, lettering, text, graphics, decision, evaluating, design brief design criteria, innovative, prototype | frame structure, stiffen,strengthen, reinforce,triangulation, stability,shape, join, temporary,permanentdesign brief, designspecification, prototype,annotated sketch,purpose, user, innovation,research, functional |