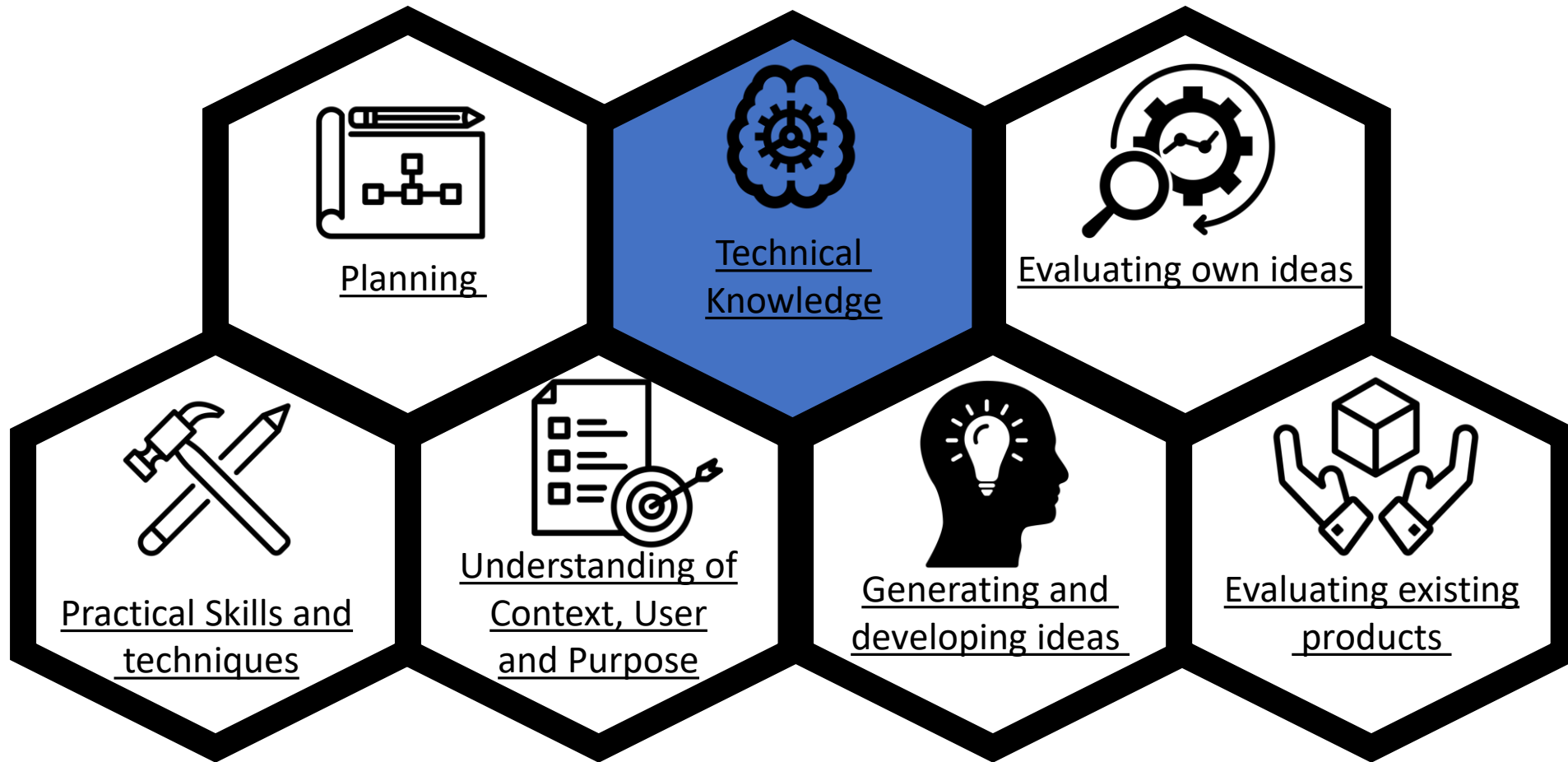
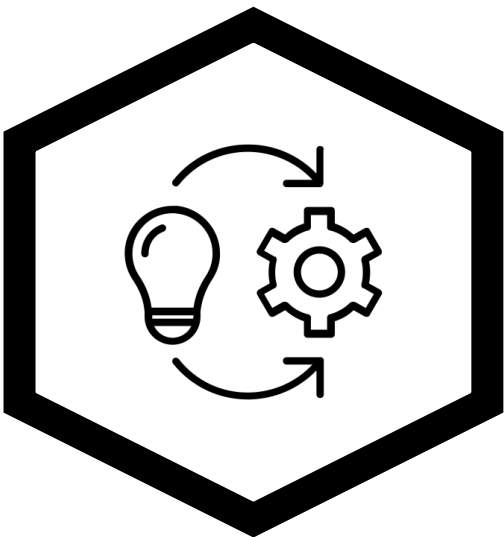
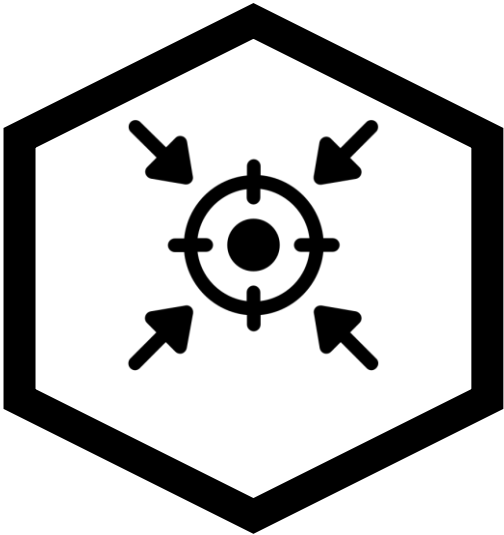
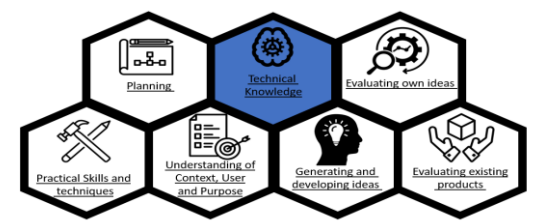


Design and Technology at Woodlea



Design and Technology at Woodlea



Intent:

For all children:

- To understand the importance of the research, design, make and evaluate processes
- To be inspired by engineers, designers, chefs and architects to enable them to create a range of structures, mechanisms, textiles, electrical systems and food products with a real-life purpose and understanding of the 'audience'.

Implementation: Projects on a Page is based on the six essentials of good practice in D&T. These need to be in place in teachers' planning to ensure children's learning is genuinely design and technological in nature. They are consistent with the National Curriculum requirements and should be applied whenever children are designing and making products:

- User – children should have a clear idea of who they are designing and making products for, considering their needs, wants, interests or preferences. The user could be themselves, an imaginary character, another person, client, consumer or a specific target audience.
- Purpose – children should know what the products they design and make are for. Each product should perform a clearly defined task that can be evaluated in use.
- Functionality – children should design and make products that function in some way to be successful. Products often combine aesthetic qualities with functional characteristics. In D&T, it is insufficient for children to design and make products which are purely aesthetic.
- Design Decisions – when designing and making, children need opportunities to make informed decisions such as selecting materials, components and techniques and deciding what form the products will take, how they will work, what task they will perform and who they are for.
- Innovation – when designing and making, children need some scope to be original with their thinking. Projects that encourage innovation lead to a range of design ideas and products being developed, characterised by engaging, open-ended starting points for children's learning.
 - Authenticity – children should design and make products that are believable, real and meaningful to themselves i.e. not replicas or reproductions or models which do not provide opportunities for children to make design decisions with clear users and purposes in mind.

The six essentials are embedded into the Project Planners, each of which has suggestions for users and purposes, and a list of authentic products that children could design and make.

Design and Technology: **Designing Skills**



Across KS1 pupils should: generate ideas by drawing on their own experiences; use knowledge of existing products to help come up with ideas; develop and communicate ideas by talking and drawing; model ideas by exploring materials, components and construction kits and by making templates and mock-ups; use information and communication technology, where appropriate, to develop and communicate their ideas.

Across KS2 pupils should: share and clarify ideas through discussion; model their ideas using prototypes and pattern pieces; use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas; and use computer-aided design to develop and communicate their ideas.

In early KS2 pupils should also: generate realistic ideas, focusing on the needs of the user; and make design decisions that take account of the availability of resources. In late KS2 pupils should also: generate innovative ideas, drawing on research; and make design decisions, taking account of constraints such as time, resources and cost

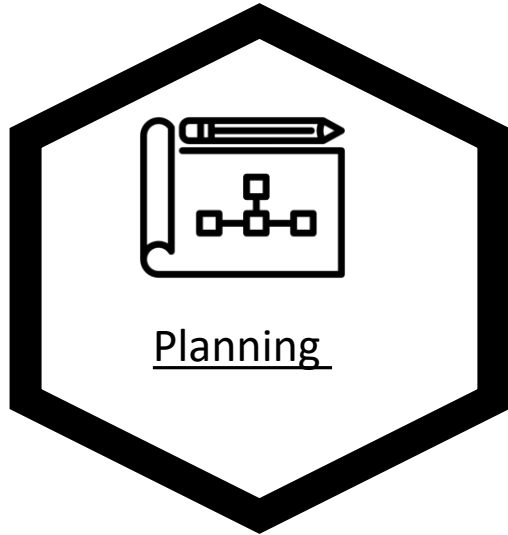


Across KS1 pupils should: work confidently within a range of contexts, such as imaginary, story-based, home, school, gardens, playgrounds, local community, industry and the wider environment; state what products they are designing and making; say whether their products are for themselves or other users; describe what their products are for; say how their products will work; say how they will make their products suitable for their intended users; and use simple design criteria to help develop their ideas.

Across KS2 pupils should: work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment; describe the purpose of their products; indicate the design features of their products that will appeal to intended users; explain how particular parts of their products work.

In early KS2 pupils should also: gather information about the needs and wants of particular individuals and groups; and develop their own design criteria and use these to inform their idea. In late KS2 pupils should also: carry out research, using surveys, interviews, questionnaires and web-based resources; identify the needs, wants, preferences and values of particular individuals and groups; and develop a simple design specification to guide their thinking

Design and Technology: *Making Skills*



Across KS1 pupils should: plan by suggesting what to do next; select from a range of tools and equipment, explaining their choices; and select from a range of materials and components according to their characteristics.

Across KS2 pupils should: select tools and equipment suitable for the task; explain their choice of tools and equipment in relation to the skills and techniques they will be using; select materials and components suitable for the task; and explain their choice of materials and components according to functional properties and aesthetic qualities.

In early KS2 pupils should also: order the main stages of making. In late KS2 pupils should also: produce appropriate lists of tools, equipment and materials that they need; and formulate step-by-step plans as a guide to making



Across KS1 pupils should: follow procedures for safety and hygiene; use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components; measure, mark out, cut and shape materials and components; assemble, join and combine materials and components; and use finishing techniques, including those from art and design.

Across KS2 pupils should: follow procedures for safety and hygiene; and use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components

In early KS2 pupils should also: measure, mark out, cut and shape materials and components with some accuracy; assemble, join and combine materials and components with some accuracy; apply a range of finishing techniques, including those from art and design, with some accuracy. In late KS2 pupils should also: accurately measure, mark out, cut and shape materials and components; accurately assemble, join and combine materials and components; accurately apply a range of finishing techniques, including those from art and design; use techniques that involve a number of steps; and demonstrate resourcefulness when tackling practical problems.

Design and Technology: Evaluating Skills



Across KS1 pupils should explore: what products are; who products are for; what products are for; how products work; how products are used; where products might be used; what materials products are made from; and what they like and dislike about products.

Across KS2 pupils should investigate and analyse: how well products have been designed; how well products have been made; why materials have been chosen; what methods of construction have been used; how well products work; how well products achieve their purposes; how well products meet user needs and wants; and inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products.

In early KS2 pupils should also investigate and analyse: who designed and made the products; where products were designed and made; when products were designed and made; and whether products can be recycled or reused. In late KS2 pupils should also investigate and analyse: how much products cost to make; how innovative products are; how sustainable the materials in products are; and what impact products have beyond their intended purpose.



Across KS1 pupils should: talk about their design ideas and what they are making; make simple judgements about their products and ideas against design criteria; and suggest how their products could be improved.

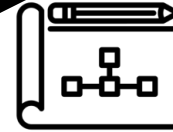
Across KS2 pupils should: identify the strengths and areas for development in their ideas and products; and consider the views of others, including intended users, to improve their work.

In early KS2 pupils should also: refer to their design criteria as they design and make; and use their design criteria to evaluate their completed products. In late KS2 pupils should also: critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make; and evaluate their ideas and products against their original design specification.

KS1 Design and Technology Skills



Across KS1 pupils should: generate ideas by drawing on their own experiences; use knowledge of existing products to help come up with ideas; develop and communicate ideas by talking and drawing; model ideas by exploring materials, components and construction kits and by making templates and mock-ups; use information and communication technology, where appropriate, to develop and communicate their ideas.



Across KS1 pupils should: plan by suggesting what to do next; select from a range of tools and equipment, explaining their choices; and select from a range of materials and components according to their characteristics.



Across KS1 pupils should: talk about their design ideas and what they are making; make simple judgements about their products and ideas against design criteria; and suggest how their products could be improved.



Across KS1 pupils should: work confidently within a range of contexts, such as imaginary, story-based, home, school, gardens, playgrounds, local community, industry and the wider environment; state what products they are designing and making; say whether their products are for themselves or other users; describe what their products are for; say how their products will work; say how they will make their products suitable for their intended users; and use simple design criteria to help develop their ideas.



Across KS1 pupils should: follow procedures for safety and hygiene; use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components; measure, mark out, cut and shape materials and components; assemble, join and combine materials and components; and use finishing techniques, including those from art and design.



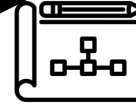
Across KS1 pupils should explore: what products are; who products are for; what products are for; how products work; how products are used; where products might be used; what materials products are made from; and what they like and dislike about products.

LKS2 Design and Technology Skills



Across KS2 pupils should: share and clarify ideas through discussion; model their ideas using prototypes and pattern pieces; use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas; and use computer-aided design to develop and communicate their ideas.

In early KS2 pupils should also: generate realistic ideas, focusing on the needs of the user; and make design decisions that take account of the availability of resources.



Across KS2 pupils should: select tools and equipment suitable for the task; explain their choice of tools and equipment in relation to the skills and techniques they will be using; select materials and components suitable for the task; and explain their choice of materials and components according to functional properties and aesthetic qualities.

In early KS2 pupils should also: order the main stages of making.



Across KS2 pupils should: identify the strengths and areas for development in their ideas and products; and consider the views of others, including intended users, to improve their work.

In early KS2 pupils should also: refer to their design criteria as they design and make; and use their design criteria to evaluate their completed products.



Across KS2 pupils should: work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment; describe the purpose of their products; indicate the design features of their products that will appeal to intended users; explain how particular parts of their products work.

In early KS2 pupils should also: gather information about the needs and wants of particular individuals and groups; and develop their own design criteria and use these to inform their idea.



Across KS2 pupils should: follow procedures for safety and hygiene; and use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components. In early KS2 pupils should also: measure, mark out, cut and shape materials and components with some accuracy; assemble, join and combine materials and components with some accuracy; apply a range of finishing techniques, including those from art and design with some accuracy.



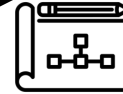
Across KS2 pupils should investigate and analyse: how well products have been designed; how well products have been made; why materials have been chosen; what methods of construction have been used; how well products work; how well products achieve their purposes; how well products meet user needs and wants; and inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products. In early KS2 pupils should also investigate and analyse: who designed and made the products; where products were designed and made; when products were designed and made; and whether products can be recycled or reused.

UKS2 Design and Technology Skills



Across KS2 pupils should: share and clarify ideas through discussion; model their ideas using prototypes and pattern pieces; use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas; and use computer-aided design to develop and communicate their ideas.

In late KS2 pupils should also: generate innovative ideas, drawing on research; and make design decisions, taking account of constraints such as time, resources and cost.



Across KS2 pupils should: select tools and equipment suitable for the task; explain their choice of tools and equipment in relation to the skills and techniques they will be using; select materials and components suitable for the task; and explain their choice of materials and components according to functional properties and aesthetic qualities. In late KS2 pupils should also: produce appropriate lists of tools, equipment and materials that they need; and formulate step-by-step plans as a guide to making



Across KS2 pupils should: identify the strengths and areas for development in their ideas and products; and consider the views of others, including intended users, to improve their work. In late KS2 pupils should also: critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make; and evaluate their ideas and products against their original design specification.



Across KS2 pupils should: work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment; describe the purpose of their products; indicate the design features of their products that will appeal to intended users; explain how particular parts of their products work. In late KS2 pupils should also: carry out research, using surveys, interviews, questionnaires and web-based resources; identify the needs, wants, preferences and values of particular individuals and groups; and develop a simple design specification to guide their thinking

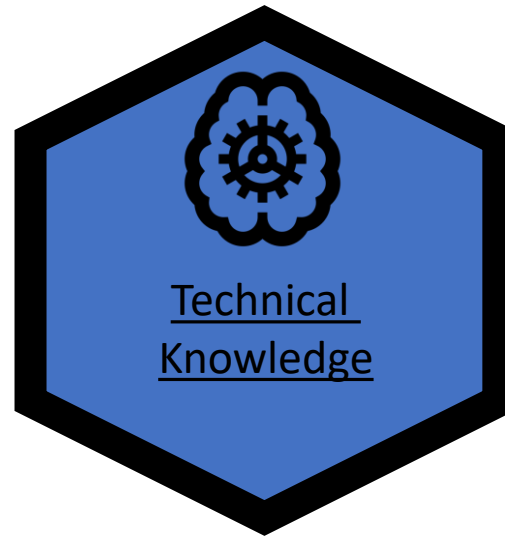


Across KS2 pupils should: follow procedures for safety and hygiene; and use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components. In late KS2 pupils should also: accurately measure, mark out, cut and shape materials and components; accurately assemble, join and combine materials and components; accurately apply a range of finishing techniques, including those from art and design; use techniques that involve a number of steps; and demonstrate resourcefulness when tackling practical problems.



Across KS2 pupils should investigate and analyse: how well products have been designed; how well products have been made; why materials have been chosen; what methods of construction have been used; how well products work; how well products achieve their purposes; how well products meet user needs and wants; and inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products. In late KS2 pupils should also investigate and analyse: how much products cost to make; how innovative products are; how sustainable the materials in products are; and what impact products have beyond their intended purpose.

Design and Technology Knowledge



Across KS1 pupils should know: about the simple working characteristics of materials and components; about the movement of simple mechanisms such as levers, sliders, wheels and axles; how freestanding structures can be made stronger, stiffer and more stable; that a 3-D textiles product can be assembled from two identical fabric shapes; that food ingredients should be combined according to their sensory characteristics; and the correct technical vocabulary for the projects they are undertaking

Across KS2 pupils should know: how to use learning from science to help design and make products that work; how to use learning from mathematics to help design and make products that work; that materials have both functional properties and aesthetic qualities; that materials can be combined and mixed to create more useful characteristics; that mechanical and electrical systems have an input, process and output; and the correct technical vocabulary for the projects they are undertaking

In early KS2 pupils should also know: how mechanical systems such as levers and linkages or pneumatic systems create movement; how simple electrical circuits and components can be used to create functional products; how to program a computer to control their products; how to make strong, stiff shell structures; that a single fabric shape can be used to make a 3D textiles product; and that food ingredients can be fresh, pre-cooked and processed.

In late KS2 pupils should also know: how mechanical systems such as cams or pulleys or gears create movement; how more complex electrical circuits and components can be used to create functional products; how to program a computer to monitor changes in the environment and control their products; how to reinforce and strengthen a 3D framework; that a 3D textiles product can be made from a combination of fabric shapes; and that a recipe can be adapted by adding or substituting one or more ingredients.

Design and Technology **Cooking and Nutrition**

Note: Food technology projects are part of our Ready for Life curriculum so details on each project are detailed there. Skills and knowledge are listed here to show comprehensive cover of the DT NC.



Across KS1 pupils should know: that all food comes from plants or animals; and that food has to be farmed, grown elsewhere (e.g. home) or caught.

Across KS2 pupils should know: that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world.

In late KS2 pupils should also know: that seasons may affect the food available; and how food is processed into ingredients that can be eaten or used in cooking.



Across KS1 pupils should know: how to prepare simple dishes safely and hygienically, without using a heat source; and how to use techniques such as cutting, peeling and grating.

Across KS2 pupils should know: how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source; and how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.



Across KS1 pupils should know: how to name and sort foods into the five groups in The eatwell plate ; and that everyone should eat at least five portions of fruit and vegetables every day.

In early KS2 pupils should also know: that a healthy diet is made up from a variety and balance of different food and drink, as depicted in The eatwell plate; and that to be active and healthy, food and drink are needed to provide energy for the body.

In late KS2 pupils should also know: that recipes can be adapted to change the appearance, taste, texture and aroma; and that different food and drink contain different substances – nutrients, water and fibre – that are needed for health.

Design and Technology Breadth of Study

Y1

Y2

Y3

Y4

Y5

Y6



Free Standing Structures



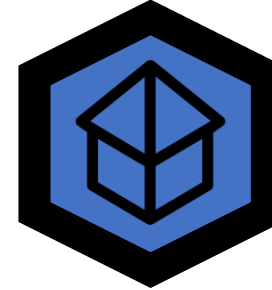
Joining Techniques – Puppets



2D to 3D



Simple Programming and Control



Frame Structures



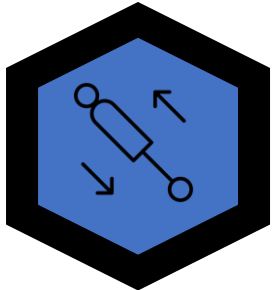
Pulleys or Gears



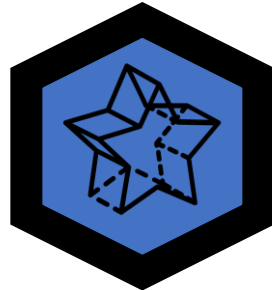
Mechanisms – Sliders and
Levers



Wheels and Axles –
Fire Engines



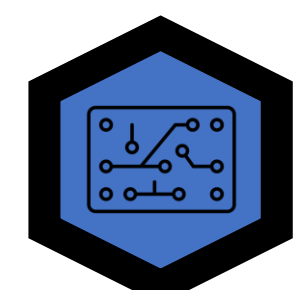
Pneumatics



Shell Structures
using CAD



Combining different
fabric shapes



Electrical Systems –
Monitoring and Control