

# Design Technology Progression Document

## National Curriculum Expectations

**Purpose Of Study:** Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

**Aims:** The national curriculum for design and technology aims to ensure that all pupils: develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world. To build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users critique, evaluate and test their ideas and products and the work of others to understand and apply the principles of nutrition and learn how to cook.

**Attainment Targets:** By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

### Key stage 1

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts.

When designing and making, pupils should be taught to:

- design purposeful, functional, appealing products for themselves and other users based on design criteria
- generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology
- select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
- select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics
- explore and evaluate a range of existing products
- evaluate their ideas and products against design criteria
- build structures, exploring how they can be made stronger, stiffer and more stable
- explore and use mechanisms in their products.

## Key Stage 2

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].

When designing and making, pupils should be taught to:

- use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups
- generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
- select from and use a wider range of tools and equipment to perform practical tasks accurately
- select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities
- investigate and analyse a range of existing products
- evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- understand how key events and individuals in design and technology have helped shape the world
- apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
- understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]
- apply their understanding of computing to program, monitor and control their products.

EYFS (Statutory Framework)	Key Stage 1	Lower Key Stage Two	Upper Key Stage Two
<p>They safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Children can explain the processes they have used. Children know the importance for good health of physical exercise, and a healthy diet, and talk about ways to keep healthy and safe.</p> <p>Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.</p>	<p>Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts.</p> <p>When designing and making, pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• design purposeful, functional, appealing products for themselves and other users based on design criteria</li> <li>• generate, develop, model and communicate their ideas through</li> </ul>	<p>Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts.</p> <p>When designing and making, pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups</li> <li>• generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</li> <li>• select from and use a wider range of tools and equipment to perform practical tasks accurately</li> <li>• select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and</li> </ul>	

	<p>talking, drawing, templates, mock-ups and, where appropriate, information and communication technology</p> <ul style="list-style-type: none"><li>• select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]</li><li>• select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics</li><li>• explore and evaluate a range of existing products</li><li>• evaluate their ideas and products against design criteria</li><li>• build structures, exploring how they can be made stronger, stiffer and more stable</li><li>• explore and use mechanisms in their products.</li></ul>	<p>aesthetic qualities</p> <ul style="list-style-type: none"><li>• investigate and analyse a range of existing products</li><li>• evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</li><li>• understand how key events and individuals in design and technology have helped shape the world</li><li>• apply their understanding of how to strengthen, stiffen and reinforce more complex structures</li><li>• understand and use mechanical systems in their products</li><li>• understand and use electrical systems in their products</li><li>• apply their understanding of computing to program, monitor and control their products.</li></ul>	
Design and Technology - where does it fit in?			
Cycle A	Autumn	Spring	Summer
FS1/2	Making Diva lamps Salt dough Christmas decorations Continuous provision and access to a variety of construction and modelling materials and tools	Designing and building a Gaudi model using recycled materials Making pancakes Building a bug hotel in the outside area Continuous provision and access to a variety of construction and modelling materials and tools	Designing and building a new home for a pirate Designing and creating a treasure map Continuous provision and access to a variety of construction and modelling materials and tools
Year 1/2	Baking Bread Food Technology	Design and Make a Toy Aeroplane	Toy Animal from the Seaside Sewing

		Construction	
Year 3/4	Roman Chariot Construction	Toy Animal from Around the World Sewing	Edible Garden Food Technology
Year 5/6	Vegetable Turnover/Stew (rationing based recipe) Food Technology	Erupting 3D Volcanoes - Mod Roc Construction	Greek Tunic Sewing
Cycle B	Autumn	Spring	Summer
FS1/2	Designing and building a new home for the 3 little pigs Designing and building a bridge, testing different materials Baking Gingerbread men Continuous provision and access to a variety of construction and modelling materials and tools	Designing and making a Chinese dragon Designing and making from recycled materials Making pancakes Continuous provision and access to a variety of construction and modelling materials and tools	Designing and building a habitat for local wildlife and minibeasts Making a healthy fruit salad Continuous provision and access to a variety of construction and modelling materials and tools
Year 1/2	3D Castles Construction	Shoebox Habitat with sewn in element (could be the animal) Sewing	Fruit Kebabs - Healthy Eating Food Technology
Year 3/4	Stone Age Satchel Sewing	Anglo-Saxon Stew Food Technology	Viking Longship Construction
Year 5/6	Paper Mache Mask & Shadouf Construction	Chocolate Food Technology	Patchwork Underground Railroad blanket Sewing

## Progression of Knowledge – Design Technology

	EYFS		Key Stage 1		Lower Key Stage 2		Upper Key Stage 2	
	The development of children's artistic and cultural awareness supports their imagination and creativity. It is important that children have regular opportunities to engage with the arts, enabling them to explore and play with a wide range of media and materials. The quality and variety of what children see, hear and participate in is crucial for developing their understanding, self-expression, vocabulary and ability to communicate through the arts. The frequency, repetition and depth of their experiences are fundamental to their progress in interpreting and appreciating what they hear, respond to and observe		Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making.					
	FS1	FS2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Planning and Generating Ideas	<p>Show an enjoyment of construction and food through provision.</p> <p>Experiment with different materials, tools and techniques including scissors and cutlery.</p>	<p>Show an enjoyment of construction and cooking through provision.</p> <p>Safely explore a variety of materials, tools and techniques including scissors and cutlery.</p> <p>Explore how things work.</p> <p>Work purposefully to create and construct using different media.</p>	<p>Introduce a DT book.</p> <p>Enjoy different products within different areas of DT.</p> <p>Experiment with different materials.</p> <p>Name some different tools and techniques.</p>	<p>Develop a DT book as a place to record ideas.</p> <p>List what they enjoy products within different areas of DT.</p> <p>Look at different source materials.</p> <p>Generate ideas through exploration of materials.</p> <p>Name some different tools and techniques that they have used.</p>	<p>Continue to use DT books to record ideas.</p> <p>Enjoy reviewing different products and reasoning why they enjoy it.</p> <p>Explore how ideas develop through different medias.</p> <p>Generate ideas through research of a product.</p> <p>Name more techniques and tools that they have used.</p>	<p>Continue to develop DT books to record individual responses to their learning.</p> <p>Enjoy looking at different products and reason why they enjoy it and give alternative opinions.</p> <p>Explore how ideas develop through different medias and give an opinion.</p> <p>Generate ideas through research of a product independently.</p>	<p>Continue to use DT books to record and reflect on their learning.</p> <p>Enjoy looking at different products. Also giving reasons why they enjoy it and give alternative opinions, looking at how they can inspire making.</p> <p>Explore how ideas develop through different medias, giving an opinion and preference.</p>	<p>Continue to use a DT book to record and reflect on their learning showing clear improvements through planning.</p> <p>Enjoy looking at different products. Also giving reasons why they enjoy it and give alternative opinions, suggest improvements, looking at how they can inspire making.</p>

						Name more techniques and tools that they have used and express a preference.	Develop ideas through experimentation and questioning about products.  Generate ideas through research of a product independently, using IT.	Explore how ideas develop through different medias, giving an opinion and preference, and discussing the creator's intention.  Develop ideas through experimentation and questioning about products.  Generate ideas through research of a product independently, using IT.
	Idea, cut, hold, eat, think, make.	Idea, cut, hold, eat, think, make.	Idea, think, make, plan.	Idea, think, make, plan.	Idea, think, make, plan, research, tools.	Idea, think, make, plan, research, tools.	Idea, think, make, plan, research, tools, inspire, reason.	Idea, think, make, plan, research, tools, inspire, reason.
Construction and Making	<p>Use blocks and other materials including lego to build and stack.</p> <p>Use different methods to join materials including glue.</p> <p>Make imaginative structures.</p> <p>Experiment with different construction materials including natural resources.</p>	<p>Use different materials including natural resources to build for a purpose.</p> <p>Use different methods to join materials including glue.</p> <p>Make imaginative structures and explain ideas behind them.</p> <p>Experiment with design and construct to understand how</p>	<p>Begin to build structures, explaining how they joined the materials.</p> <p>Explore mechanisms to use in construction.</p> <p>Explore a range of tools and equipment to perform practical tasks.</p> <p>Create a recognisable structure.</p>	<p>Build structures, exploring how they can be made stronger, stiffer and more stable.</p> <p>Explore and use mechanisms to use in construction.</p> <p>Use a range of tools and equipment to perform practical tasks.</p> <p>Create a recognisable structure.</p>	<p>Build more complex structures exploring how they can be made stable.</p> <p>Explore mechanical systems in their products</p> <p>Explore a wider range of tools, materials and equipment to perform practical tasks.</p> <p>Create a recognisable structure for a purpose.</p>	<p>Apply knowledge and understanding of how to strengthen, stiffen and reinforce structures/frameworks to create a product.</p> <p>Explore mechanical systems in their products</p> <p>Explore a wider range of tools, materials and equipment to</p>	<p>Apply knowledge and understanding of how to strengthen, stiffen and reinforce structures to make more complex structures.</p> <p>Understand and use mechanical and electrical systems in their products.</p>	<p>Know how to build, reinforce, stiffen and strengthen a 3D framework and more complex structures.</p> <p>Know how to construct products using permanent joining techniques.</p> <p>Understand and use mechanical and electrical systems in their products.</p>

	Make use of props and materials when role playing.	best to build something. Select the right resources to help them construct.	Know how to make their design using appropriate materials, tools and techniques.  With help measure, mark out, cut and shape a range of materials.	Select appropriate tools, materials and techniques; use correct vocabulary to name and describe them.  With help measure, cut and score with some accuracy. Know how to assemble, join and combine materials in order to make a product.	Measure, mark out, cut, score and assemble components with more accuracy. 'Work safely and accurately with a range of simple tools and equipment.	perform practical tasks.  Create a recognisable structure for a purpose.  Know how to measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques.  Know how to measure, join and combine materials and components accurately in temporary and permanent ways.  Use a glue gun with close supervision (one to one)	Choose from a wider range of tools, materials and equipment to perform practical tasks.  Create a recognisable structure for a purpose which relates to an established product.  Measure and mark out more accurately.  With growing confidence cut and join with accuracy to ensure a good-quality finish to the product.  Use different tools and equipment safely and accurately.	Choose from a wider range of tools, materials and equipment to perform practical tasks.  Create a recognisable structure for a purpose which relates to an established product. Know how to measure and mark out more accurately.  Confidently cut and join with accuracy to ensure a precise, quality finish to the product  Use different tools and equipment safely and accurately.
	Build, stick, join, make, scissors, cut, glue, paint, bigger, smaller, taller, shorter.	Build, stick, join, make, scissors, cut, glue, paint, bigger, smaller, taller, shorter.	Build, stick, join, make, scissors, cut, glue, paint, lever.	Build, stick, join, make, scissors, cut, glue, paint, lever.	Build, stick, join, make, scissors, cut, glue, paint, pulley, rotate, mechanical, stronger.	Build, stick, join, make, scissors, cut, glue, paint, pulley, rotate, mechanical, stronger.	Build, stick, join, make, scissors, cut, glue, paint, pulley, rotate, mechanical, electrical, reinforce.	Build, stick, join, make, scissors, cut, glue, paint, pulley, rotate, mechanical, electrical, reinforce.
Textiles	Explore crafting using different materials.  Use fine motor skills to thread	Explore using different materials and glue.  Use fine motor skills to thread	Learn how to join two pieces of material together.  Decorate pieces of material.	Learn how to join two pieces of material together.	Understand how to join two pieces of materials together.	Understand how to join two pieces of materials together.  Think carefully about the different	Know which techniques to use to join pieces of materials together.	Know which techniques to use to join pieces of materials together.

	<p>different objects (larger holes).</p> <p>Play with different toys that have been sewn.</p>	<p>through smaller holes.</p> <p>Play with different toys that have been sewn.</p> <p>Think about own clothing and how it looks.</p>	<p>Use a needle and thread on paper.</p> <p>Create a product using sewing techniques.</p>	<p>Decorate pieces of material with different media.</p> <p>Start to cut out shapes using a template on materials with support.</p> <p>Start to develop confidence in using a running stitch.</p> <p>Create a product using sewing techniques.</p>	<p>Think carefully about the decorations used on material.</p> <p>Cut out shapes using a template on materials with some support.</p> <p>Use a running stitch or an over stitch independently.</p> <p>Create a recognisable product using sewing techniques.</p>	<p>types of decoration on material.</p> <p>Cut out shapes using a template on materials with some support.</p> <p>Use a running stitch or an over stitch independently.</p> <p>Create a recognisable product using multiple sewing techniques.</p>	<p>Use particular designs to enhance the quality of my product.</p> <p>Use pins to hold materials in place and cut out shapes.</p> <p>Understand which type of stitch (including the blanket stitch) would best suit the purpose of the product.</p> <p>Make a quality product using sewing techniques.</p>	<p>Use particular designs to enhance the quality of my product.</p> <p>Use pins to hold materials in place and cut out specific shapes.</p> <p>Understand which type of stitch (including the blanket stitch) would best suit the purpose of the product and use it independently.</p> <p>Make a quality product using sewing techniques.</p>
	Material, thread, string	Material, thread, string, clothes	Material, sew, stitch, needle, thread.	Material, sew, stitch, needle, thread.	Material, sew, stitch, needle, thread, running stitch, over stitch, pattern.	Material, sew, stitch, needle, thread, running stitch, over stitch, pattern.	Material, sew, stitch, needle, thread, running stitch, over stitch, blanket stitch, pattern.	Material, sew, stitch, needle, thread, running stitch, over stitch, blanket stitch, pattern.
Food Technology	<p>Develop fine motor skills of grabbing cutlery and food.</p> <p>Taste a variety of foods from different food groups.</p> <p>Develop sensory skills when working with food,</p>	<p>Can safely hold cutlery and food.</p> <p>Taste a variety of foods from different food groups.</p> <p>Use sensory skills when working with food,</p>	<p>Begin to understand that all food comes from plants or animals.</p> <p>Explore common food sources (e.g. from plants or animals).</p> <p>Prepare simple dishes safely and</p>	<p>Know that all food comes from plants or animals.</p> <p>Develop understanding of where different foods come from.</p> <p>Demonstrate how to prepare simple dishes safely and hygienically, without</p>	<p>Begin to understand that food is grown, reared and caught in the UK, Europe and the wider world.</p> <p>Know how a healthy diet is made up from a variety and balance of different food and drink.</p>	<p>Begin to understand that food is grown, reared and caught in the UK, Europe and the wider world.</p> <p>Know how a healthy diet is made up from a variety and balance of different food and drink and exercise.</p>	<p>Understand that food is grown, reared and caught in the UK, Europe and the wider world.</p> <p>Know how food is processed into ingredients that can be eaten or used in cooking.</p>	<p>Understand that food is grown, reared and caught in the UK, Europe and the wider world with specific examples.</p> <p>Know and explain how food is processed into ingredients that</p>



	Express a preference in food, Begin to get into the habit of washing hands before eating.	Express a preference in food, Begin to work hygienically when handling food or eating by washing hands with soap.	hygienically with support.  Know that everyone should eat at least five portions of fruit and vegetables every day.  Start to understand how to name and sort foods into the five groups.	using a heat source, with support.  Start to name and sort foods into the five groups.  Recognise the need for a variety of food in a diet.  Know and demonstrate how to use techniques such as cutting, peeling and grating.	Understand how to prepare and cook a variety of dishes, hygienically, including experience of using a heat source with support.  Begin to understand how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.  Begin to know that to be active and healthy, food and drink are needed to provide energy for the body.	Understand how to prepare and cook a variety of dishes, hygienically, including experience of using a heat source more independently.  Know how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.  Know how to measure and weigh ingredients appropriately.	Know how to hygienically prepare and cook a variety of predominantly savoury dishes including the use of a heat source.  Start to understand that seasons may affect the food available.  Demonstrate increasing confidence in how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.  Know how to appropriate tools and equipment, weighing and measuring with scales.	can be eaten or used in cooking.  Know how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including the use of a heat source.  Know that seasons may affect the food available.  Know and demonstrate how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.  Know how to use appropriate tools and equipment, weighing and measuring with scales.
	Food, healthy, clean, wash, grow, plants, meat, vegetables, cook, mix, eat, like, don't like.	Food, healthy, clean, wash, grow, plants, meat, vegetables, cook, mix, eat, like, don't like.	Food, healthy, clean, wash, grow, plants, meat, vegetables, cook, mix, equipment.	Food, healthy, clean, wash, grow, plants, meat, vegetables, cook, mix, equipment.	Food, healthy, clean, wash, grow, plants, meat, vegetables, cook, mix, equipment, peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.	Food, healthy, clean, wash, grow, plants, meat, vegetables, cook, mix, equipment, peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.	Food, healthy, clean, wash, grow, plants, meat, vegetables, cook, mix, equipment, peeling, chopping, slicing, grating, mixing, spreading,	Food, healthy, clean, wash, grow, plants, meat, vegetables, cook, mix, equipment, peeling, chopping, slicing, grating, mixing, spreading,

							kneading, baking, measuring, weighing.	kneading, baking, measuring, weighing.
Evaluating	<p><b>Share their creations.</b></p> <p>Give meaning to some of their own creations,</p>	<p><b>Share their creations, explaining the processes they have used.</b></p> <p>Give meaning to their own creations.</p> <p>Recognise techniques and tools used to create other creations.</p> <p>Develop own ideas and think about how best to do something.</p>	<p><b>Learn about different existing products and designs.</b></p> <p>Respond to research into a product with my own final piece.</p> <p>Evaluate my work with what I like about my work and what I would change.</p> <p>Describing the differences and similarities between different techniques.</p> <p>Give an opinion on a product.</p> <p>Work and discuss in groups.</p>	<p><b>Learn about different existing products and designs.</b></p> <p>Respond to a product with my own final piece and link to the original design.</p> <p>Evaluate my work with what I like, dislike and what I would change about my work.</p> <p>Describing the differences and similarities between different practices and techniques.</p> <p>Give an opinion on a product.</p> <p>Work independently and in groups.</p> <p>Express preference.</p>	<p><b>Investigate and analyse a range of existing products and how they have helped shape the world.</b></p> <p>Respond to a product with my own final piece and identify clear links to the original product.</p> <p>Evaluate my work, explaining what I like and why, what I would change about my work and why, and what I have learnt.</p> <p>Enjoy discussing my own and others' work, expressing thoughts and feelings, and using knowledge and understanding of techniques.</p> <p>Describing the differences and similarities between different practices and techniques.</p> <p>Work independently and in groups.</p> <p>Express preference in style of product</p>	<p><b>Investigate and analyse a range of existing products and how they have helped shape the world.</b></p> <p>Respond to a product with my own final piece and identify clear links to the original product.</p> <p>Evaluate my work, explaining what I like and why, what I would change about my work and why, and what I have learnt in relation to the original product.</p> <p>Discuss and review my own and others' work, expressing thoughts and feelings, and identify modifications/ changes and see how they can be developed further.</p> <p>Describing the differences and similarities between different practices and techniques.</p>	<p><b>Investigate and analyse a range of existing products, key events and how they have helped shape the world.</b></p> <p>Start to compare a product to my own design independently.</p> <p>Respond to a product with my own final piece and identify clear links to the original product.</p> <p>Evaluate my work, explaining what I have learnt, what I like and why, what I would change about my work and why, and compare my own work to the original product.</p> <p>Recognise products and begin to place them in key movements or historical events.</p> <p>Discuss and review own and others work, expressing</p>	<p><b>Investigate and analyse a range of existing products, key events and how they have helped shape the world.</b></p> <p>Compare a product independently, reflecting on previous knowledge.</p> <p>Respond to a product with my own final piece and identify clear links to the original product.</p> <p>Evaluate my work, in detail, independently. Explaining the processes of work, what I have learnt, what I like and why, what I would change about my work and why, and compare my own work to the original product.</p> <p>Recognise products and begin to place them in key</p>

						<p>Work independently and in groups.</p> <p>Express preference in style of product with reasoning.</p>	<p>thoughts and feelings, and identify modifications/ changes and see how they can be developed further</p> <p>Explore a range of great creators, architects and designers in history</p> <p>Compare the style of different styles and approaches.</p>	<p>movements or historical events.</p> <p>Discuss and review my own and others' work, expressing thoughts and feelings, and identify modifications/ changes and see how they can be developed further.</p> <p>Explore a range of great creators, architects and designers in history</p> <p>Ask questions about technique, idea and outcome.</p>
	Think, like, don't like, made, cooked, built	Think, like, don't like, made, cooked, built	Evaluate, think, like, dislike.	Evaluate, think, like, dislike, change	Evaluate, think, like, dislike, change, same, different, improve, product	Evaluate, think, like, dislike, change, same, different, improve, product	Evaluate, think, like, dislike, change, same, different, improve, product	Evaluate, think, like, dislike, change, same, different, improve, product. Questions: why? how?