

Eden Park Design Technology Intent and Progression Statements



Design and Technology

Eden Park Intent

Growing hearts and minds – together

The subject of design and technology at Eden Park aims to develop empowered problem solving individuals who are able to find creative solutions to a range of problems, as well as design engaging and interesting products for a range of people and purposes. Design and technology is an inspiring, rigorous and practical subject where children will hone skills of designing, making and evaluating, as well as technical knowledge.

We want our children to be deep critical thinkers, able to analyse and evaluate existing products that are already on the market and be able to communicate their opinions to others clearly. As they move through the school, they will also begin to evaluate their own products as well as their peers by consulting their design briefs. This will lead them to be reflective of their own and other's work. As they develop their evaluative skills, they will actively seek out ways to improve products, which will lead them to be more successful designers as well as active learners.

Within design and technology, our children will also develop professionalism, as they design, make and evaluate their own products. At KS1, the children have opportunities to create real products for themselves or others, finishing it to the best standard they can. As they move into KS2, there is more emphasis on choice for the children. They will learn to select the best tools and finishing materials based on their functionality and aesthetics, leading children to create a professional finished design.

We want Eden Park children to have the opportunity to gain deep subject knowledge in DT so that they have the knowledge and skills to make products that solve real and relevant problems within a variety of contexts. Their learning will take place in a range of areas as they work with textiles, food, electronics and mechanisms, and they will learn key vocabulary that links with these areas so that they can communicate their thinking correctly.

NC:

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

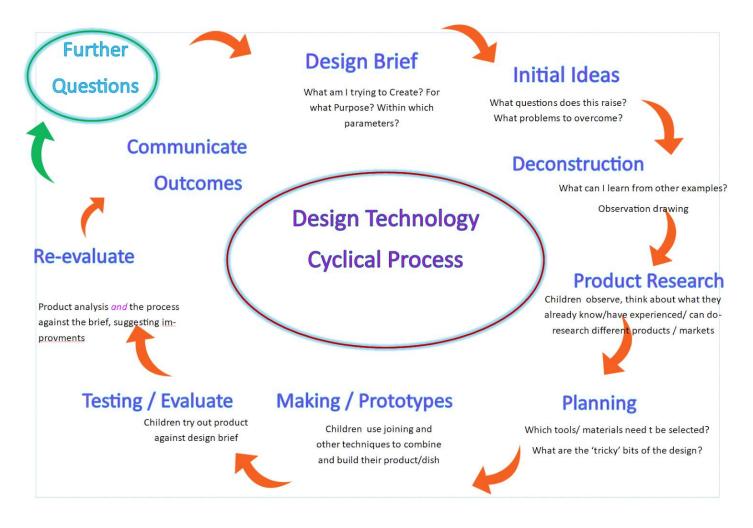
technology education makes an essential contribution to the creativity, culture, wealth and wellbeing of the nation.

1. Conceptual Development

Six Key Concepts	/ Principles Distinctive to DT
User	Pupils should have a clear idea of who they are designing and making products for, considering their needs, wants, values, interests and preferences. The intended users could be themselves or others, an imaginary or story-based character, a client, a consumer or specific target group.
Purpose	Pupils should be able to clearly communicate the purpose of the products they are designing and making. Each product they create should be designed to perform one or more defined tasks. Pupils' products should be evaluated through use.
Functionality	Pupils should design and make products that work/function effectively in order to fulfil users' needs, wants and purposes
Design decisions	Pupils need opportunities to make their own design decisions. Making design decisions allows pupils to demonstrate their creative, technical and practical expertise, and draw on learning from other subjects. Through making design decisions pupils decide on the form their product will take, how their product will work, what task or tasks it will perform and who the product will be for.
Innovation	When designing and making, pupils need some scope to be original with their thinking. Projects that encourage innovation lead to a range of design ideas and products being developed and are characterised by engaging open ended starting points for learning.
Authenticity	Pupils should design and make products that are believable, real and meaningful to themselves and others.

2. Design Process – A Design Technology Approach

i. A Cyclical Design Process



Year group: Reception

Designing/Generating Ideas

- Use gestures, talking and arrangements of materials and components to show design
- Beginning to explore ideas using different media and materials
- Adapt ideas to make them better
- Use contexts set by the teacher and myself
- Use language of designing and making (join, build, shape, longer, shorter, heavier etc.)

	<u>Making</u>
<u>Planning</u>	Practical skills and techniques
 Talk about ideas and processes as products are they're being made Follow instructions involving several ideas/steps Construct with a purpose in mind using a variety of resources 	 Use and explore a variety of materials/resources, tools and skills/techniques to cut, shape and join Handle equipment and tools safely under assistance e.g. scissors, hole punch, stapler, rolling pins, pastry cutters etc. Discuss how to keep an activity safe and hygienic Decorate their design with materials

Evaluating

- Dismantle, examine, talk about existing products
- Verbally explain what they like/dislike about their product
- Begin to talk about changes made during the making process, e.g., making a decision to use a different joining method.
- Suggest one thing that they might change when creating a similar product

Technical knowledge

Food and I	<u>Nutrition</u>		<u>Textiles</u>	<u>Mechanisms</u>	<u>Materials/Structures</u>
<u>Knowledge</u>	<u>Skills</u>	<u>Knowledge</u>	<u>Skills</u>		
 Know the importance of a healthy diet Talk about ways to keep healthy and safe 	 Practise stirring, mixing, pouring and blending Identify how to make an activity 	 Explore, sort and group textiles by 	 Cut and stick a variety of fabrics together Apply simple finishing techniques, e.g., 	 To know objects on wheels can be moved by pulling or pushing 	 To know how to make a freestanding structure from simple blocks/boxes To know how to make a structure taller

By the end of EYFS, children should be able to:

- Construct with a purpose in mind
- Use simple tools and techniques competently and appropriately.
- Build and construct with a wide range of objects, selecting appropriate resources and adapting their work when necessary.
- Select the tools and techniques they need to shape, assemble and join materials they are using.

Use senses to describe foods	safe and hygienic and put this into practice	texture and colour.	fabric crayons, gluing decoration.	 To know how a wheel fits on to an axle To know a product that has wheels 	 To know how t structure more To know one e strong structur To know one e strong/weak m 	e stable example of a re example of a	
			Key Vocabulary	L			
Design/Make/Evaluate	cut, shape, join, k longer, shorter, h	th, improvement, chould build leavier, lighter etc. urces, tools, material	-				
Technical Knowledge	senses and senso	nent/utensils used <mark>*</mark> ory vocabulary e.g., s veet, sticky, smooth, <mark>**</mark>				Materials/Structure structure material taller, shorter stable strong, weak	<u>res</u>

^{*}names of equipment/utensils to be added to MTP depending on cooking unit taught

^{**}sensory vocabulary may need to be adapted depending on cooking unit taught

^{***}names of tools to be added to MTP depending on DT foci taught

Year group: Year 1/2

Designing/Generating Ideas

- Generate ideas by drawing on their own and other people's experiences
- Use knowledge of existing products to produce ideas
- When planning, identify a target group for what they intend to design and make (imaginary, home, class, story based)
- When planning, explain purpose of product, how it will work and how it will be suitable for users
- Design using pictures, words, models, diagrams, begin to use ICT
- Design products following a simple design criteria
- Choose best tools and materials and explain choices

Making

	Planning		Practical skills and techniques
•	Explain their ideas as they're being made and how it meets their design	mea	th support, use and explore a variety of materials/components, tools and skills/techniques to asure, mark-out, cut, shape and join materials and components
•	criteria Start to choose their materials and tools, explaining their choices with links to the materials characteristics	pins, • Wor	ndle equipment and tools safely and independently e.g. scissors, hole punch, stapler, rolling s, pastry cutters etc. ork in a safe and hygienic manner e simple finishing techniques to improve the appearance of a product

Evaluating

- Dismantle, examine, talk about existing products
- Evaluate existing products considering and express a personal opinion about them (what they like/dislike)
- Evaluate own work, identifying strengths and possible changes they might make, linking this to the design criteria and purpose

Technical knowledge

Food and Nut	<u>trition</u>	<u>Text</u>	<u>iles</u>	<u>Mechanisms</u>	Materials/Structures
<u>Knowledge</u>	<u>Skills</u>	<u>Knowledge</u>	<u>Skills</u>		
 Explain where in the world different foods originate from 	Create simple dishesusing a	To know what a template is	Use a simple template.	 Understand what a level/slider is 	To make a freestanding structure

By the end of KS1, children should be able 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, ICT
- 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

- Understand that all food comes from plants or animals
- Understand that food has to be farmed, grown elsewhere (e.g., home) or caught
- Name and sort foods into the five groups in the Eatwell guide
- Understand that everyone should eat at least five portions of fruit and vegetables every day and start to explain why
- Use what they know about the Eatwell guide to design and prepare dishes
- Describe textures using relevant vocabulary

- range of skills including cutting, peeling and grating – safely and hygienically
- supervision
 Measure or
 weigh using
 measuring
 cups or

electronic

scales

under

e Explain common hygiene practices and keep a hygienic kitchen

- To know why designers use templates
- Understand how simple 3-D textile products are made, using a template to create two identical shapes.
- To know when to use certain fabrics based on their suitability to the product
- To know where simple fabrics come from/are made of e.g., wool from sheep, cotton from cotton plants

 Join fabrics using glue, staples, string and basic sewing techniques. Stitches children may use include: running stitch and button hole stitch.

Running stitch:



Button-hole stitch



- Apply an increasing range of finishing techniques, e.g., painting and printing.
- Decorate textiles using a range of items such as buttons, sequins and beads.

- Begin to understand how to use wheels and axles
- Create products using levers, sliders or wheels
- from different materials e.g., paper
- Suggest ways to make a freestanding structure stronger, stiffer and more stable
- Put their ideas/suggestions into practise
- Identify different materials and describe differences between them
- Use their knowledge of materials to help them make structures stronger, stiffer and more stable

- 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 [for example, levers, sliders, wheels and axles], in their products
- Use the basic principles of a healthy and varied diet to prepare dishes
- Understand where food comes from

Key Vocabulary

Design/Make/Evaluate	ideas, plan, design, make, evaludesign brief product cut, shape, join equipment, resources, tools, m decorate user			
Technical Knowledge	Food and nutrition plant, animal	<u>Textiles</u> template	<u>Mechanisms</u> lever	Materials/Structures freestanding structure
				0

Eatwell	Guide - fruit, vegetables,	designer	slider	material
protein,	dairy, carbohydrates (and	fabric – add names of	wheel	stronger
example	es of these) – also covered in Y3	examples to MTP sheet	axle	stiffer
science	curriculum objectives	join	tools used during lessons***	stable
healthy	diet, safe/safety, ingredients	tools – add names of examples		
names o	of equipment/utensils used <mark>*</mark>	to MTP sheet e.g. needles,		
sensory	vocabulary e.g., soft, juicy,	thread etc.		
crunchy	, sweet, sticky, smooth, sharp,	sewing, stitch – running stitch,		
crisp, so	our <mark>**</mark>	button-hole stitch		
verbs –	cutting, peeling, grating,	finish, finishing techniques		
measur	ing, weighing, assembling,	decorate		
cooking				
hygiene	/hygienic			

^{*}names of equipment/utensils to be added to MTP depending on cooking unit taught

^{**}sensory vocabulary may need to be adapted depending on cooking unit taught

^{***}names of tools to be added to MTP depending on DT foci taught

Year group: Year 3/4

Designing/Generating Ideas

- Use knowledge of a broad range of existing products to produce ideas
- Generate realistic ideas for a product, considering its purpose and user
- When planning, identify a target group for what they intend to design and make (home, school, leisure, food industry and wider environment)
- When planning, start to explain their choice of tools, materials and components including function and aesthetics, and suggest alternative methods of making if the first attempt fails
- When planning, indicate design features of their products and explain how particular parts of their products work.
- Design using annotated sketches, cross-sectional drawings and computer-aided design
- Design products following a design criteria
- Test ideas out through using prototypes

Making

<u>Planning</u>

- Explain about their ideas as they make progress and be willing change things if this helps them improve their work
- Select appropriate tools/equipment, materials and components for making their product, explaining their choices for use according to their function and aesthetic qualities

Practical skills and techniques

- Use and explore a variety of materials/components, tools and skills/techniques to accurately measure, mark-out, cut, score, shape and join materials and components
- Work in a safe and hygienic manner whilst using a range of tools
- Use finishing techniques to strengthen and improve the appearance of a product using a range of equipment, including ICT

Evaluating

- Dismantle, examine and evaluate existing products whilst considering and express a personal opinion about them (what they like/dislike) and identify criteria that can be used for their own designs
- Evaluate own work both during and at the end of the project
- Evaluate own work, identifying strengths and possible changes they might make, linking this to the design criteria and purpose
- Evaluate how product could be improved, with particular links to appearance and usability
- Evaluate product by carrying out appropriate tests

By the end of KS2, children should be able 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, crosssectional and exploded diagrams, prototypes, pattern pieces and computeraided design
- select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], 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

Food and Nutrition Knowledge Skills		tiles Skills	Mechanisms and Materials/	Electrical (Y4	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
 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 Start to know when, where and how food is grown, linking this to seasonality That a healthy diet is made up from a variety and balance of different food and drink, as depicted in The Eatwell plate Measure and weigh ingredients to the nearest gram and millilitre Start to independently follow a recipe 	 Knowledge To create their own template to make products To identify an array of different fabrics and know when to use certain fabrics based on their characteristics and suitability to the product To know what accuracy is and how it can be improved To know how/when decorate stitches to finish a product 	 Use a template created by themselves Measure, tape or pin, cut and join fabric with some accuracy Sew using a range of different stitches, including a running stitch, button-hole stitch, blanket stitch, back stitch and decorate stitches. Over stitch: Back stitch Back stitch	 Create products using mechanisms such as wheels and axles Understand and use lever and linkage mechanisms to create movement in products Distinguish between fixed and loose pivots. Know how to construct a strong, stiff shell structures. Develop and use knowledge of nets of cubes and cuboids and, where 	To know what an electrical circuit is To know and use a range of electrical components and their functions, such as a bulb and buzzer in products To know what an electrical circuit is To know what an electrical circuit is	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 understand and apply the principles of a healthy and varied diet prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques

 investigate and analyse a range of existing products
 evaluate their ideas and

	 Explain common hygiene practices and keep a hygienic kitchen 		 Understand seam allowance, create simple patterns and appropriate decoration techniques, including applique! 	appropriate, more complex 3D shapes.		 understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.
			Key Vocabulary			
Design/Make/Evaluate	design brief product cut, shape, joi equipment, re	esources, tools, materials, c etch, cross-sectional drawin	omponents			
Technical Knowledge	Food and nuting grown, reared healthy diet, it sweet, savour temperature gram, millilitro recipe names of equipments of equipmen	rition I, caught calance y, seasonality e ipment/utensils used* oulary e.g., soft, juicy, et, sticky, smooth, sharp, g, chopping, grating, t, whisking, spreading, baking	Textiles template designer strengthen, stiffen accuracy fabric – and names of examples to MTP sheet tools - add names of exan to MTP sheet e.g. needles thread etc. pattern measure, tape/pin, cut, jo sewing, stitches – running stitch, button-hole stitch, blanket stitch, back stitch, decorative stitches fastenings seam allowance	fixed pivot loose pivot strong, stiff, shell structu 3D net tools used de	ructures e s ce mechanism b c s stable e	Electrical electrical/electricity simple circuit component pattery, battery holder wire oulb, bulb holder ouzzer conductor, insulator

	decorate/decoration	
	techniques – applique	

*names of equipment/utensils to be added to MTP depending on cooking unit taught

Year group: Year 5/6

Designing/Generating Ideas

- Use knowledge of a broad range of existing products to produce ideas
- Conduct and use research to inform and develop detailed design criteria to inform the design of innovative, functional and appealing products that are fit for purpose and aimed at a target market
- When planning, identify a target group for what they intend to design and make (home, school, leisure, culture, industry and wider environment)
- When planning, start to explain their choice of tools, materials and components including function and aesthetics, and suggest alternative methods of making if the first attempt fails
- When planning, indicate design features of their products and explain how particular part of their products work.
- Design using annotated sketches, cross-sectional drawings and exploded diagrams (possibly including computer-aided design) to develop and communicate their ideas
- Design products that have a clear purpose and indicate the design features of their products that will appeal to the intended user
- Generate a range of design ideas and clearly communicate final designs
- Test ideas out through using prototypes

improve their work

Making

<u>Planning</u>

Explain about their ideas as they make progress and be willing change things if this helps them

 Select appropriate tools/equipment, materials and components for making their product, explaining their choices for use according to their function and aesthetic qualities

Practical skills and techniques

- With growing confidence, select a variety of materials/components, tools and skills/techniques to precisely measure, mark-out, cut, score, shape and join materials and components to achieve a high-quality finish
- Work in a safe and hygienic manner whilst using a range of tools
- Use finishing techniques to strengthen and improve the appearance of a product using a range of equipment, including ICT
- Make modifications to their product as they go along, if needed
- Achieve a high-quality, professional product

Evaluating

By the end of KS2, children should be able 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, crosssectional and exploded diagrams, prototypes, pattern pieces and computeraided design
- select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- select from and use a wider range of materials and components, including construction materials,

^{**}sensory vocabulary may need to be adapted depending on cooking unit taught

^{***}names of tools to be added to MTP depending on DT foci taught

- Dismantle, examine and complete detailed competitor analysis of existing products on the market whilst considering and express a personal opinion about them (what they like/dislike) and identify criteria that can be used for their own designs
- Evaluate own work both during and at the end of the project
- Evaluate own work, identifying strengths and possible changes they might make, linking this to the design criteria and purpose
- Evaluate how product could be improved, with particular links to materials and methods used as well as appearance and usability
- Evaluate product by carrying out appropriate tests
- Seek out evaluation from others
- Record their evaluations using drawings and labels

Technical knowledge

	improve their work				
	kills Knowledge	<u>Skills</u>	Mechanisms and Materials/ Structures	Electrical (Y6 only)	 understand how key events and individuals in design and technology have helped shape the world apply their understanding of
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 Start to know when, where and how food is grown, linking this to seasonality That a healthy diet is made up from a variety and balance of	es such as chopping, slicing, mixing, g, kneading and wto cut, shape ad dough ingredients using ate cooking for specific jobs and weigh its accurately o in different use certain fabric based on their characteristics and suitability to the product To know what accuracy is and hit can be improved to cooking or specific jobs and weigh its accurately o in different use certain fabric based on their characteristics and suitability to the product To know what accuracy is and hit can be improved the finish a product Understand how fabrics can be	created by themselves Measure, tape or pin, cut and join fabric with increasing accuracy Produce a 3D textile product from a combination of accurately made pattern pieces, fabric shapes and different fabrics	 Understand how mechanical systems such as cams, pulleys or gears create movement 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. 	 To know and use a range of electrical components and their functions, such as a bulb, buzzer and switch in their products To know how a simple switch can be made and incorporate one in their product To know how to test components in more complex circuits (series and parallel) To know how to test components in 	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 understand and apply the principles of a healthy and varied diet

textiles and ingredients,

properties and aesthetic

range of existing products

products against their own design criteria and consider the views of others to

• investigate and analyse a

evaluate their ideas and

qualities

according to their functional

different food and
drink, as depicted
in The Eatwell
plate, and
understand that
food and drink
contain different
substances (fibre,
vitamins etc.)
which are vital for
a balanced diet

- <u>Independently</u> follow a recipe
- Understand a recipe can be adapted by adding / subsidising ingredients
- Adapt recipes to change appearance, taste, texture or aroma
- Explain common hygiene practices and keep a hygienic kitchen

- stiffened and reinforced, where appropriate.
- blanket stitch, back stitch and decorate stitches.
- To know when to use particular stitch types (including finishing stitches)
- To use seam allowances
- To use embroidery and explain how it embellishes a product

- Create products using cams, pulleys or gears
- Understand how to strengthen, stiffen and reinforce 3-D frameworks.
- a circuit and assess potential faults
- prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques
- understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

Key Vocabulary

Design/Make/Evaluate	ideas, plan, design, make, evaluate – stro	ideas, plan, design, make, evaluate – strength, improvement				
_	design brief					
	product					
	cut, shape, join					
	equipment, resources, tools, materials, o	quipment, resources, tools, materials, components				
	annotated sketch, cross-sectional drawing, exploded diagram prototype decorate					
purpose, user						
	aesthetic					
Technical Knowledge	Food and nutrition	<u>Textiles</u>	Mechanisms and	<u>Electrical</u>		
J	grown, reared, caught	template	Materials/Structures	electrical/electricity		
	healthy diet, balance	designer	Mechanism	simple circuit		
	sweet, savoury, seasons/seasonality	strengthen, stiffen	cam, pulley, gear	parallel circuit		
	recipe	accuracy	strong, stiff, stable	component		

adapt, refine, add, substitute	fabric – and names of examples to	3D framework	battery, battery holder
appearance, taste, texture, aroma	MTP sheet	tools used during	wire
names of equipment/utensils used*	tools - add names of examples to	lessons <mark>***</mark>	bulb, bulb holder
sensory vocabulary e.g., soft, juicy,	MTP sheet e.g. needles, thread etc.		buzzer
crunchy, sweet, sticky, smooth, sharp,	pattern		switch
crisp, sour <mark>**</mark>	measure, tape/pin, cut, join		conductor, insulator
verbs – peeling, chopping, slicing,	sewing, stitches – running stitch,		
grating, mixing, spreading, kneading and	button-hole stitch, blanket stitch,		
baking. cut, knead, shape	back stitch, decorative stitches		
appearance, taste, texture, aroma	seam allowance		
hygiene/hygienic	embroidery		

^{*}names of equipment/utensils to be added to MTP depending on cooking unit taught

^{**}sensory vocabulary may need to be adapted depending on cooking unit taught

^{***}names of tools to be added to MTP depending on DT foci taught