

Unit 9A(i) Adapted - Healthier Diet Campaign

Adapted from Unit 9A(i) Selecting materials

D&T Year 9

About the unit

The main aim of this unit is for pupils to apply their understanding of the properties of materials/ingredients when designing.

In this unit, pupils tackle a design and make assignment (DMA) on the theme 'Burgers'. They design and make a new burger for sale in a food outlet, which contributes to a healthy diet and is as low in fat as possible, to fit in with a healthier diet campaign.

Pupils gain the knowledge, skills and understanding they need to carry out the DMA successfully through product evaluation activities and focused practical tasks. They:

- apply their understanding of the nutritional and working characteristics of food components when selecting materials/ingredients and matching them to making processes
- learn how to use heat treatment and other processes to change the working properties of materials/ingredients
- learn about the diversity of one food product, eg burgers and the influence of culture and lifestyle
- use hedonic ranking on a five-point scale, difference tests, eg paired comparison and triangle tests, and appropriate vocabulary

This unit is expected to take 10-15 hours

KS3 national strategy D&T objectives

Exploring the task

Explore needs, want and opportunities in the context of designing for markets

Select information sources, gathering and sorting data that will help with ideas for, and decisions about the design

Generating ideas

Combine ideas from a variety of sources

Developing and modelling ideas

Make decisions about the choice of materials and manufacturing processes and use them to draw up a manufacturing specification

Planning

Prioritise and reconcile decisions on materials, time and production

Evaluating

Appreciate the conflicting demands upon designers and makers and acknowledge the balance between help and harm

Expectations

At the end of this unit

most pupils will: understand the physical and chemical properties and the working characteristics of a range of common and modern materials/ingredients; classify materials/ingredients and components according to their properties and working characteristics, using a range of sources of information; take account of the characteristics and properties of materials/ingredients when deciding how and when to use them; reconcile those decisions, taking account of aesthetics, time and cost; combine, process and finish materials/ingredients and components to create more useful properties and particular aesthetic effects; select tools and equipment to shape and form materials/ingredients safely and accurately, and to finish them appropriately; understand whether resources have been used appropriately, and the impact of resources beyond the purpose for which they were designed

some pupils will not have made so much progress and will: consider aesthetic characteristics as they design, exploring the use of materials/ingredients and describing their sensory attributes; understand how the working characteristics of materials/ingredients affect the way they are used; combine and mix

materials/ingredients to create useful properties; measure, mark out, cut, shape and form a range of materials/ingredients safely and with some accuracy; carry out appropriate tests before putting any improvements into practice; recognise that the quality of a product depends on how well it is made and how well it meets its intended purpose, *eg how well a product meets social, economic and environmental considerations*

some pupils will have progressed further and will: use a range of industrial applications when working with common materials/ingredients and processes, where appropriate; cut, shape and form materials/ingredients to specified tolerances; combine processes or materials/ingredients to create more useful properties, and know how the ability to change materials/ingredients is exploited in industry; take account of a wider range of issues, *eg product maintenance, safety, the degree of accuracy required in production*; devise tests to check the quality of their work at critical points; know how to ensure that their products are of a suitable quality for intended users, *eg how well a product meets moral, cultural and environmental considerations*, and suggest modifications that would improve their product's performance, if necessary

Prior learning

It is helpful if pupils have:

- applied their understanding of the physical and chemical properties of foods
- considered the aesthetics of food, and how this affects what consumers choose
- considered nutritional aspects and values, sources and functions
- standardised the results of sensory testing and used their findings

Language for learning

Through the activities in this unit, pupils will be able to understand, use and spell correctly words relating to:

- materials/ingredients, *eg layer, paired comparison test, triangle test*

Speaking and listening - through the activities pupils could:

- ask different sorts of questions to extend thinking and refine ideas, *eg Does that imply that...? Does that mean...? Would we need to...?*
- discuss and evaluate conflicting evidence to arrive at a considered viewpoint

Resources:

Cy-burgers and FoodLab interactive websites

<http://www.bmesonline.org.uk/interactives.htm#>

MVM videos 3,4,5

<http://www.bmesonline.org.uk/mvm.htm>

Balance of Good Health model

Use the 'balance of good health' plate model. Individual foods are not classed as healthy or unhealthy, the emphasis is on achieving a balance of foods in the whole diet over a period of time,

The issues surrounding food choices and healthy eating are complex. Make sure that you are clear in your own mind about the key messages. Useful sources of accurate information are three websites

www.food.gov.uk

www.nutrition.org.uk

www.wiredforhealth.gov.uk

Links with other subjects

- Science: Unit 8A 'Food and digestion', unit 9B 'Fit and healthy', unit 9D 'Plants for food'.
- Sustainable development: considering how a product affects the environment and discussing the ethical use of materials will underpin learning in the citizenship programme of study. Pupils will be taught about the world as a global community and the economic and environmental implications of this. They will be taught to think about moral, social and cultural issues by analysing information and to justify orally and in writing their personal opinion about such issues.

Learning Objectives Pupils Should Learn	Possible Teaching Activities	Learning Outcomes Pupils	Points to Note
<p>PRODUCT EVALUATION</p> <ul style="list-style-type: none"> to explore the diversity of one product, <i>eg burgers and the influence of culture and lifestyle on new product development</i> how technological advances and the use of local and global resources change the materials/ingredients available for products 	<p>Exploring existing products intended for different consumers</p> <ul style="list-style-type: none"> Ask the pupils to look at a display or photos or packages from burgers that are intended for different consumers. For example, luxury barbecue, take-away at a concert, quick lunch on the motorway service station, teenagers out with friends, children's party Ask the pupils to compare different examples of burgers that are intended to meet similar needs. Ask them to identify how designing for the user and for manufacture can conflict with other design criteria, <i>eg the cost of materials/ingredients</i> <p><i>Who is it for?</i> <i>What assumptions have been made about the people who might eat it?</i> <i>Why is this product like this?</i> <i>How is this product different from one produced 5 years ago?</i> <i>What would happen if you were to add.....?</i> <i>What is wrong with this product?</i> <i>What could be done differently or better?</i> <i>How good is this product compared to.....?</i> <i>Why have these particular ingredients been chosen?</i> <i>Where do the ingredients come from?</i> <i>How will this product be different in 10 years time?</i></p> <p>How are burgers produced?</p> <ul style="list-style-type: none"> Get pupils in groups to use the Interactive - Cy-burgers - Activity 2 Burger Production Plant. Get them to explore the processes, the equipment used and the critical control points. Ask them to find out the meaning of the words - lab, fresh mincer, pre-blender, blender, forming machine, freezing tunnel, packing. They should be able to list the verbs used to describe the processes performed by the machines, for example, blend, freeze, form, pack Ask them to discuss in their group how different this Production plant is from the way they make burgers at home or at school, or how they are made in a small production plant such as a fast food outlet. Ask them to explain why it is different. Discuss with the pupils why the materials/ingredients used for food products today are different from those used when their grandparents were young. Ask the pupils to consider <i>Why will the materials/ingredients used to make products in the future be different from those we use today?</i> 	<ul style="list-style-type: none"> put together criteria and questions that they can use to evaluate products and suggest improvements appreciate the conflicting demands faced by designers and product makers, and reach a practical outcome, <i>eg reconciling function and aesthetics with the cost of materials/ingredients</i> describe how the materials/ingredients used in one product have changed over time and predict how materials/ingredients may change in the near future, <i>eg fats and oils used in food products</i> 	<p>Literacy - Language for learning when evaluating products</p> <ul style="list-style-type: none"> Ask pupils to work in small groups to discuss a set of needs that the burger might be designed to meet. They could use a flip chart to list questions that users might want to ask about any burger, then rephrase these into criteria. It would be helpful if the teacher gives an example of this process initially. Group presentations to the whole class will allow for further discussion and refinement of criteria.

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FOCUSED PRACTICAL TASKS (FPTs)			
<ul style="list-style-type: none"> that working properties can be altered by heat treatment and by combining materials/ ingredients how to use the working characteristics of different materials/ingredients and components when designing food products to use their knowledge of the properties of materials/ ingredients, <i>eg nutritional value</i> to influence what they select for a design to test materials/ingredients against a specification before going into production, <i>eg size and quality of raw materials/ingredients</i> 	<p>Exploring some initial ideas - making and tasting</p> <ul style="list-style-type: none"> Get the pupils to work in groups of two or three and use Interactive - Cyburgers - Activity 4 Virtual Burger to come up with three different sorts of burgers and a list of ingredients for each burger. Ask the pupils to try out their ideas for real - making and taste testing the burgers - experimenting with different combinations of materials/ingredients for different purposes, eg to experiment with different types of mince for the burger, and different cooking methods Pupils should evaluate their initial ideas for taste, texture, colour and analyse the nutritional content of each one, particularly for fat, sugar, salt and fibre <p>Who is this burger for?</p> <ul style="list-style-type: none"> Get the pupils to work in groups of two or three and use Interactive - Create your own virtual Burger. Ask them to identify three potential users for the fast food outlet (eg, young person, dad of toddler, retired person). Ask them to estimate how much that person would be willing to spend on a burger, and then challenge them to design a burger for each person that they think they will like, but still contribute to a healthy diet. The teacher may model this process for the pupils taking one of the examples, and talking through what information they would seek about the user, and how they would find out (the key questions they would ask such as - who is the user? What do they like? When will it be eaten? How much would they spend?). They would then explain how they would assess if the design contributes to a healthy diet (what do we mean by a healthy diet, how can I find out what this person needs, can I modify or change the idea so that it is lower in fat, sugar, salt, higher in fibre, and increase the fruit and vegetable consumption) When evaluating the design ideas presented by the pupils - <p>Discuss how important it is to be aware of the target consumer when designing (what they like and how much they will pay) and how they must both like the product, and yet for it to contribute to a healthy diet</p> <ul style="list-style-type: none"> discuss how selecting ingredients often involves reconciling conflicting demands, <i>eg</i> <ul style="list-style-type: none"> - choosing an ingredient that is low in fat while maintaining an acceptable end product - choosing an ingredient that is high in fibre while maintaining an acceptable end product - choosing a cheaper ingredient while maintaining an acceptable end product 	<ul style="list-style-type: none"> alter the working properties of materials/ ingredients by combining and processing them, <i>eg producing a burger with the required taste or texture by altering the ingredients</i> consider conflicting demands when selecting materials/ ingredients, <i>eg to choose the material/ingredient within a price range that best meets the function and aesthetic qualities required</i> 	<p>See lesson plan for this activity</p>

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<ul style="list-style-type: none"> • how to design food products to meet specific nutritional requirements • how to use hedonic ranking on a five-point scale and difference tests, <i>eg paired comparison test, triangle tests</i> 	<p>The Healthier diet campaign</p> <ul style="list-style-type: none"> • Remind pupils of the Balance of Good Health model for a healthy diet • Ask them - does everyone eat the same kind of food? Do any of your friends or family prefer to have, or have to eat a special diet? • Ask the pupils to evaluate a variety of ready-prepared meals that have been designed to meet particular nutritional needs, for example reduced fat products. Ask them to consider how the designers have tried to meet users' needs and preferences, and what constraints there would have been. Ask them to identify what ingredients and processes have changed to make the product meet a healthy diet. • What do they already know about products adapted for a healthier diet, what do they want to know?, what questions will help them find out? how will they find out? • Ask them to investigate how they could adapt existing burgers so that it contributes to a healthy diet 	<ul style="list-style-type: none"> • design food products to meet specific nutritional requirements, <i>eg to suggest how to adapt ready-prepared meals to change their nutritional content, such as reducing the fat or sugar content</i> • evaluate food products using hedonic ranking and difference tests, <i>eg paired comparison test, triangle test</i> 	

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DESIGN AND MAKE ASSIGNMENT (DMA)			
<ul style="list-style-type: none"> to design and make a product in which the optimum use of materials/ingredients reconciles a number of criteria, including the working characteristics, production processes, environmental and social issues, costs and aesthetics, by applying the knowledge, skills and understanding they developed during the product evaluation activities and focused practical tasks 	<p>Set the pupils a DMA in which they:</p> <ul style="list-style-type: none"> select materials/ingredients according to their characteristics and match them to appropriate making processes evaluate the materials/ingredients chosen by using fair test procedures with qualitative and quantitative measures <p>The DMA should also give the pupils an opportunity to discuss how we are all responsible for the wellbeing of others.</p> <p>Cyburgers</p> <p>A leading fast food company has asked you to design and make a new burger for sale in a food outlet, which contributes to a healthy diet and is as low in fat as possible, to fit in with its latest healthier diet campaign</p>	<ul style="list-style-type: none"> draw up a design specification and criteria that reflect users' needs combine ideas from a variety of sources refine a single idea from a range of ideas and draw up a manufacturing specification match and select materials/ingredients, considering their fitness for purpose and environmental impact specify and justify the exact types and grades of materials/ingredients, and give details of processing methods in the specification prioritise and reconcile decisions on materials/ingredients, time and production use materials/ingredients sympathetically evaluate their product against the original design criteria and assess how well the users' needs have been met write an account of the evaluation 	<p>Language for learning when writing evaluations</p> <ul style="list-style-type: none"> Remind pupils that a written account of an evaluation could include: an introductory paragraph that explains the assignment and the design issues a paragraph for each design criterion evidence of evaluation a summary of success a concluding paragraph that includes an overall evaluation, suggestions for future improvement, and a comment on what they have learnt during the DMA