

Year 9 Design Technology Rotations

1.3D Design

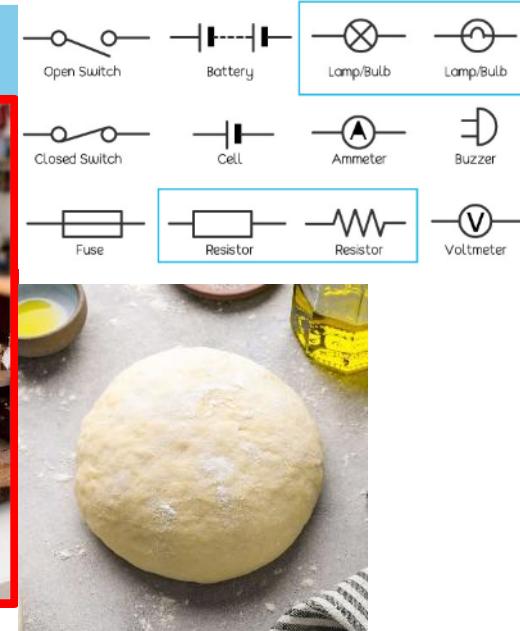
- [Journey of Knowledge](#)
- [Knowledge Organiser](#)

2. Resistant Materials

- [Journey of Knowledge](#)
- [Knowledge Organiser](#)

3. Food Technology

- [Journey of Knowledge](#)
- [Knowledge Organiser](#)



**HILLSIDE
HIGH SCHOOL**

Year 9 3D Design : Journey of Knowledge

Context and Introduction to Unit

In this unit pupils will follow the 3D design route and assessment objectives for art and design. They will produce a mini project based on the work of Eric Cremers. Pupils will build upon their knowledge of different materials used in the design and manufacture of installations. They will learn about mark making, manufacturing processes and different finishes used on 3D artwork. Pupils will have the opportunity to use practical equipment in focused practical tasks that will encompass the theory learned in the unit as well as key literacy and numeracy skills. The knowledge gained will allow pupils to make informed choices when choosing their option subjects. Students will develop knowledge of 3d artist eric cremers through analysing and research tasks. Students will revisit isometric drawing and perspective drawing. Students will develop knowledge of measuring, planning and designing leading to building and constructing their own buildings.

The bigger picture:

Personal development opportunities.

Career links.

Career link – Advertiser

Publisher, Logo designer, Web

Developer, Art director, Printmaker,

Game Artist, Interior Design

CORE KNOWLEDGE and SKILLS

3D Design Route & Assessment Objectives

Understand the expectations and criteria for art & design (3D design pathway).

Artist Study: Eric Cremers

Learn about Eric Cremers' work, style, and techniques, Analyse and research his approach to 3D art and installations.

Materials & Processes

Explore different materials used in the design and manufacture of installations, Understand various manufacturing processes, Learn about different finishes used on 3D artwork.

Drawing & Design Skills

Revisit **isometric drawing** techniques, Revisit **perspective drawing** (1-point and 2-point), Develop skills in mark making to support design communication.

Practical Skills

Use practical equipment safely and effectively in focused tasks, Apply theory to practical outcomes, Develop measuring, planning, and designing skills, Build and construct a 3D building as a final outcome.

Evaluation & Decision-Making

Apply knowledge to make informed design choices, Reflect on design and making processes to improve outcomes.

Cross-Curricular Skills

Apply key **literacy skills** (e.g., analysing, written evaluations, research), Apply **numeracy skills** (e.g., measuring, scaling, proportion).

Future Learning

Use the knowledge gained to make informed decisions about future option subjects.

Products made:

3D Constructed shanty town house

ABOVE AND BEYOND

- Visiting galleries and workshops
- Analysing product and researching into new inventions
- Finding products in everyday life and linking it back to classroom work

CORE VOCABULARY

- Sculpture
- Bold
- Vibrant
- Emotive
- Layered
- Shanty town
- Realistic
- Rustic
- Dull
- Worn
- Concept
- Orthographic
- Isometric
- Perspective

Personal Development

Discussions regarding the relationships between user, client, designer and manufacturer.

Inclusive design promoted. Use of nature to inspire products.

Understanding of shanty towns and poverty.

Literacy/Numeracy Focus

Nets,

Measurements

Analysis

Discussion of key terminology: Client, customer, profile, profession

Consumer

Audience

WHERE NEXT?

Pupils have a fuller knowledge of the 3D design course and can make informed choices for their KS4 pathway

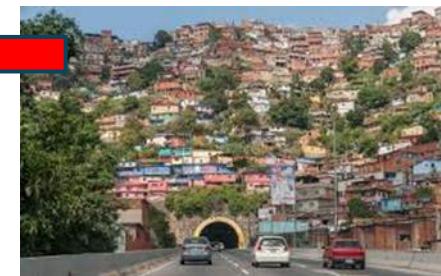
ARTIST BIOGRAPHY

Eric Cremers creates 'Habitats' (architectural objects that show how people all over the world shape or could shape their buildings).

He uses cardboard, wood, textiles and organic things like palm leaves, branches, cocoa and cactus. The theme of Habitats fascinates him most and has therefore become his main subject. Eric Cremers was once an art teacher and was born in Holland but now lives on the Dutch Island of Bonaire.



WHAT YOUR FINAL PIECE WILL LOOK LIKE



Shanty Towns

A Habitat is a home, the place where humans get all that they need to survive. Like all animals, a habitat is where humans satisfy the most basic survival requirements - the food, water, cover and places to raise young.

Step One:

Choose an image from your worksheet and draw the outline. Make sure you are pressing light with your pencil.

Step Two:

Add detail and tone using your pencil, then add colour using colouring pencils.



WAGOLL

Step Three:

Add colour and refine your artist's study with black thick to thin lines.

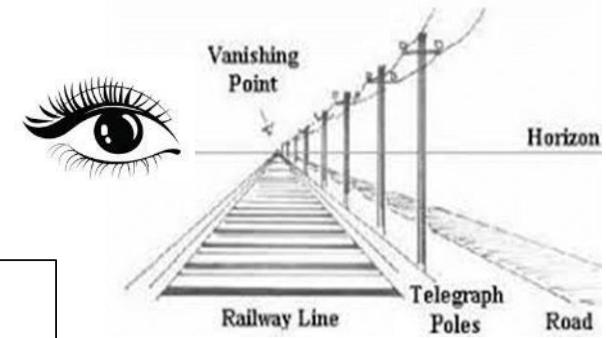
WORD RICH

Linear means the use of straight lines.

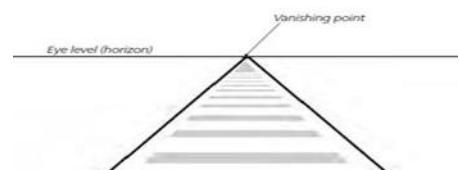
A Vanishing Point is the furthest point away from the viewer. It is where all lines are directed towards. The Horizon Line or Eye Level is to represent where the viewer's eye is, or where the sky meets the land.



PERSPECTIVE DRAWING



- Perspective, the art of representing Three dimensional (3D) drawings onto a two dimensional (2D) surface.
- 1-point perspective drawings only have one vanishing point on the horizon line located somewhere within the picture plane and all the lines are directed towards it.
- Common examples of such perspectives show a view down the street or a railway.



HILLSIDE HIGH SCHOOL



Year 9 Resistant Materials: Journey of Knowledge

Context and Introduction to Unit

Wooden Toy / Electronics

Students will understand what sustainability is whilst investigating and researching the FSC. Students will develop skills creating isometric drawings whilst revisiting the importance of conversion and measurements.

Students will make a toy wooden train using coping saws and the belt sander. Students will develop knowledge of circuitry symbols and closed circuits leading to building their own circuit using solder and other components

The bigger picture:

Personal development opportunities.

Career links.

Discussion Based

Designer

Engineer

Mechanics

Carpenter

Architect

CORE KNOWLEDGE

1. Sustainability and FSC (Forest Stewardship Council):

Sustainability: Understanding the importance of using resources in a way that does not deplete them for future generations. Involves environmental, economic, and social considerations.

FSC: An organization that certifies forests and wood products as sustainably sourced, ensuring responsible forest management that protects ecosystems and workers' rights.

Importance of choosing FSC-certified materials to support sustainable practices.

2. Isometric Drawings, Conversion, and Measurements:

Isometric Drawing: A method of 3D drawing that represents an object where the three axes are equally spaced at 120° angles, helping visualize designs accurately.

Conversion and Measurements: Revisiting skills to convert units (e.g., mm to cm), accurately measure materials, and apply precise dimensions to drawings and real objects.

3. Practical Woodworking Skills:

Coping Saw: A hand saw used for cutting curves and shapes in wood.

Belt Sander: A power tool used to smooth and finish wooden surfaces by sanding.

Techniques for safely and effectively using these tools to create wooden toys.

4. Circuitry Knowledge and Skills:

Circuit Symbols: Understanding standard symbols for components like batteries, resistors, switches, LEDs, and wires.

Closed Circuits: Concept of a complete electrical loop allowing current to flow and power components.

Building Circuits: Developing practical skills in assembling circuits, including soldering components together securely.

Products made:

Toy wooden train with working LED lights

SKILLS

- Using coping saw accurately
- Using belt sander/disk sander
- Accurate measuring and conversion
- Clean painting
- Following instructions for using adhesives

ABOVE AND BEYOND

- Visiting galleries and workshops
- Analysing product and researching into new inventions
- Finding products in everyday life and linking it back to classroom work
- Find other FSC products.

VOCABULARY

- ❑ Design Brief
- ❑ Target Audience
- ❑ Circuitry
- ❑ Material
- ❑ Solder
- ❑ Sustainability
- ❑ Creativity
- ❑ Force
- ❑ Manufactured Board
- ❑ Motion
- ❑ Dowel
- ❑ LED
- ❑ Specification -

Personal Development

Understanding of Ecosystem and importance of

Literacy Focus

Numeracy Focus

Measurements

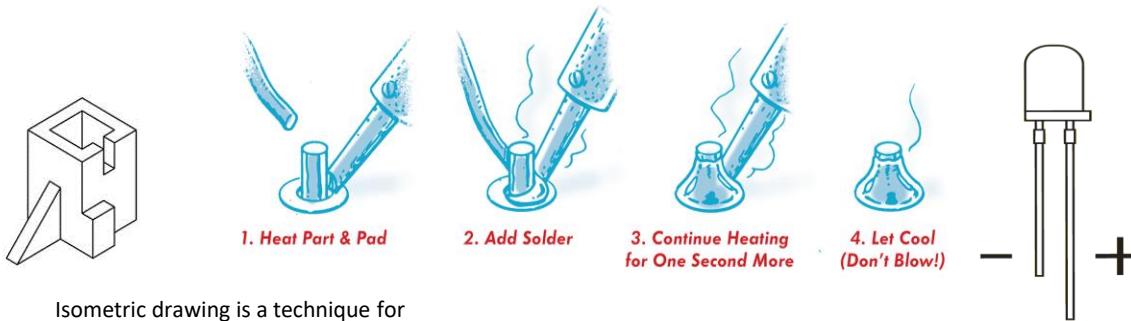
Conversion

Reading Comprehension

WHERE NEXT:

Developing skills and knowledge at KS3 can lead to GCSE design technology and GCSE 3D design.

TECHNOLOGY / RESISTANT MATERIALS



Isometric drawing is a technique for representing 3D objects in 2D, often used in technical and engineering drawings. It's also known as isometric projection



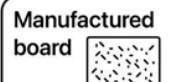
Design & Technology Keywords



Hardwood
Wood from slow-growing deciduous trees.
+ Very strong and durable
• Furniture, flooring, tool handles



Softwood
Wood from fast-growing coniferous trees.
+ Lightwork, easy to work
• Construction, joinery



Manufactured board
Man-made wood product bonded with resin.
+ Uses waste wood, stable, cheap
• Flat pack furniture, model bases



MDF
Finewood fibres pressed with resin.
+ Smooth surface, easy to shape
• Furniture carcasses, prototypes



Plywood
Thin wood veneers glued in layers at 90°.
+ Strong, resists warping
• Shelving, construction projects



Pine
Common softwood.
+ Cheap and lightweight
• Furniture, interior joinery



Oak
Common hardwood.
+ Hard-wearing, attractive grain
• Furniture, flooring



Beech
Hard, tough hardwood.
+ Resists dents, smooth finish
• Toys, workbenches



Safety goggles
Protective eyewear.
+ Prevents eye injuries
• Used when cutting or sanding



Apron
Protective clothing.
+ Keeps clothing clean and safe
• Used in workshop



Vice
Holds work firmly on bench.
+ Keeps hands free
• Holding wood when cutting or drilling



Tenon saw
Fine-toothed hand saw for straight cuts.
+ Keeps hands free
• Holding wood when cutting or drilling



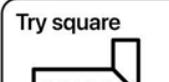
Coping saw
Narrow-blade saw for curves.
+ Accurate and clean
• Cutting joints in wood
• Model making, design work



G-clamp
Adjustable metal clamp.
+ Straight, holds work securely
• Clamping pieces for gluing



Bench hook
Wooden guide for sawing.
+ Keeps work steady
• Cutting wood safely



Try square
Measuring and marking 90° angles.
+ Accurate marking
• Woodworking joints



Steel rule
Straight metal ruler.
+ Precise measurements
• Marking out lines on materials



Marking gauge
Tool with a pin for parallel lines.
+ Ensures accuracy
• Marking across timber



Sandpaper
Abrasive paper for smoothing.
+ Creates smooth finish
• Finishing wood before painting



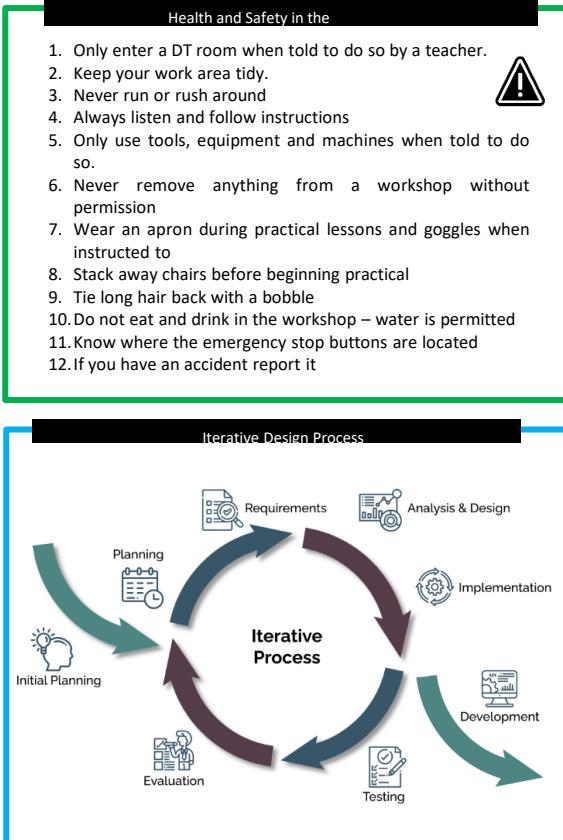
File
Metal tool with teeth for shaping.
+ Removes rough edges
• Finishing metal or plastic



Drill
Power or hand tool for making holes.
+ Accurate holes quickly
• Fitting screws or dowels



Countersink bit
Drill bit for widening screw holes.
+ Allows screw heads to sit flush
• Wood joints and fixings



TECHNOLOGY / RESISTANT MATERIALS

MDF



- Cost Effective
- High Density
- Strong
- Durable and Sustainable
- Environmentally Friendly
- Insect Proof

PLYWOOD



- Stability
- Impact Resistant
- High strength to weight ratio
- Chemical Resistance
- Affordable
- Easily cut and shaped

The FSC, or Forest Stewardship Council, is a non-governmental organization that promotes responsible forest management worldwide. They are an international non-profit dedicated to ensuring forests are managed to high environmental, social, and economic standards.



Zero deforestation



Environmental protection



Indigenous Peoples' rights respected



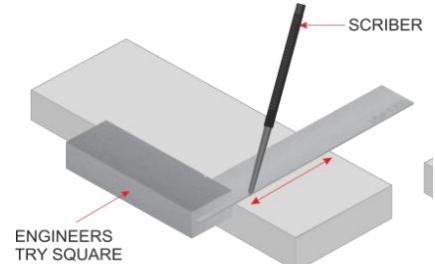
Fair wage and work environment for workers

If you have a passion for design and would like to be in the industry, there are various careers you can pursue to fulfil your aspirations

- Interior Designer
- Product Designer
- Video Game Design
- Civil Engineer
- Mechanical Engineer
- Robotics Engineer
- Aeronautical engineer
- Joiner
- Design Engineer
- Jewellery designer
- Electrical Engineer
- Sound Engineer
- Architect
- Dress Maker
- Electrician
- Surveyor



The engineers try-square is composed of two parts, the stock and the blade. They are usually made from bright mild steel with the blade being hardened and tempered so that it resists damage. It is normally used during engineering / metalworking projects



Design Brief



The FSC (Forest Stewardship Council) are collaborating with the early learning centre. They want us to create a toy train from sustainable timber. They want it decorated in bright colours and for it to be child safe.



The Journey:

- We will research into sustainable materials
- We will design and measure our toy
- We will investigate into force and motion
- We will then use equipment to cut and create
- Finally, we will paint and Decorate

Component	Symbol	Function
Battery		Provides a potential difference to push current around the circuit.
Switch		Opens to break a circuit, closes to complete a circuit
Bulb		Converts electric current into light.
Resistor		Reduces the flow of electric current.
Variable resistor		The resistance can be changed usually by turning a knob.
Light Dependent Resistor LDR		The resistance is affected by light. High resistance in darkness, low resistance in bright light.
Thermistor		The resistance is affected by temperature. High resistance when cold, low resistance when hot.
Diode		Allows current to flow in one direction only.
Fuse		Used as a safety device. Breaks the circuit when the current is too high.
Light Emitting Diode LED		Produces light with only a small amount of current. Must be connected with a resistor in series to protect it from damage.
Voltmeter		Measures voltage or potential difference in Volts (v). Must be connected in parallel to a device.
Ammeter		Measures current in Amps. Must be connected in series.
Ohmmeter		Measures the resistance of a device in Ohms.
Motor		Converts electric current to movement.
Buzzer		Converts electric current to sound.



Interested in continuing Design technology or 3D Design for GCSE? Speak to Mr. Lambert



Year 9 Food Technology: Journey of Knowledge

Context and Introduction to Unit

In this unit, pupils will learn what food technology is and when it is relevant in society. Teachers will gauge prior knowledge pupils have within the subject. They will be given an introduction to food technology, health and safety guidance to the kitchen and the importance of good hygiene. Pupils will learn about nutrition and Food types and their properties. They will learn about manufacturing food and special diets. They will also learn a number of cooking/ baking methods and apply these to producing a range of food products. They will learn about different cultures and how foods are used and celebrated within different cultures.

The bigger picture:

*Personal development opportunities.
Career links.*

Nutritional therapist, food technologist, quality manager, catering, chef, hospitality industry, business owner

CORE KNOWLEDGE

Health and safety- rules, risk assessment, hazards and precautions, hygiene, PPE, HACCP.

Bacteria, causes, prevention, cross contamination

Nutrition

Micro/macro nutrients

Properties and functions of ingredients

Manufacturing food

Special diets

Storing/cooking food safely

Cultural influences and cultural cuisine

Food miles

SKILLS

Safe and compliant use of the kitchen oven/grill/hob

Use of basic kitchen equipment

Cleaning and effectively removing bacteria

Combining ingredients

Weighing and measuring

Methods such as; all in one, creaming, rubbing, kneading

Chopping skills

recipe adaptations

Sensory evaluations and product analysis

Production methods

Time plans

Food Products

Shortcrust pastry, cheese and onion triangles, bread dough, pizzas, fruit plait.

ABOVE AND BEYOND

Independently working through methods

Recipe adaptations for special diets

Developing own recipes

Producing time plans for individual tasks

Acceleration tasks

VOCABULARY

Ingredients, combine, method, hygiene, nutrition, properties, manufacturing, diets, bacteria, micro, macro, creaming, rubbing, chopping, origin, kneading, adaptations, evaluation, sensory, blend, mix, separate, culture, aroma, texture, sensory, taste, palatable

Personal Development

Rse

Healthy lifestyle,
Food miles, packing and its impact on the environment.

Symbols on packaging, reading food labels. Ethical choices, cultural choices.

Literacy Focus

Word rich meanings
Comprehension task

Numeracy Focus

Measuring in ml, grams, weighing out, portion sizes, dividing.

WHERE NEXT:

KS4

Y9 Food Knowledge Organiser

Popular food around the world

ITALY / ITALIA



The most common foods in the Italian diet include pasta, cheese, vegetables, olive oil, meats. Italians give a lot of importance to fresh ingredients. Meals consists of breakfast (colazione), lunch (pranzo), and dinner (cena).

JAPAN / 日本



Japan's most famous dish, sushi is also widely misunderstood. Most people believe that sushi is simply raw fish. Rather, good sushi is a combination of rice, raw fish and vegetables and comes in many different forms.

UNITED STATES / USA



American cuisine includes milkshakes, BBQ, and a wide range of fried foods. A lot of American dishes are unique takes on food originally from other traditions.

Paella is the national dish and is prepared with rabbit meat and vegetables. Today, however, there are countless variations: with fish and seafood, with meat and fish or even vegetarian.

SPAIN / España



GREECE / ΕΛΛΑΣΣΑ



Greece is known for its Olive Oil. Olives grown in Greece are known for their high-quality taste and flavour. Many Greek olive oil producers still use traditional methods of production, such as cold pressing and hand-harvesting.

FRANCE / LA FRANCE



France's signature dish is considered to be escargot, a dish of cooked land snails. However bread is widely a staple with items such as baguettes and croissants.

Career Links

If you have a passion for food and would like to be in a service industry, there are various careers you can pursue to fulfil your aspirations

- Caterer
- Chef
- Pastry Chef
- Baker
- Cake Decorator
- Food Scientist
- Food Blogger
- Recipe Tester
- Factory Worker
- Personal Trainer
- Health Teacher
- Restaurant Owner
- Food Stylist
- Recipe Tester
- Cookbook Writer



Holidays and Feasts from around the world

SCOTLAND: Burns Night is a time to enjoy Scottish traditions and celebrate the renowned poet Robert Burns with a classic combination of haggis, neeps, tatties, with some poetry



SKANDANAVIA: On Midsummer's Eve people sing traditional songs and feast. One of the most popular Midsummer's Eve foods is a kind of fish, called herring, that is pickled with mustard and onions.

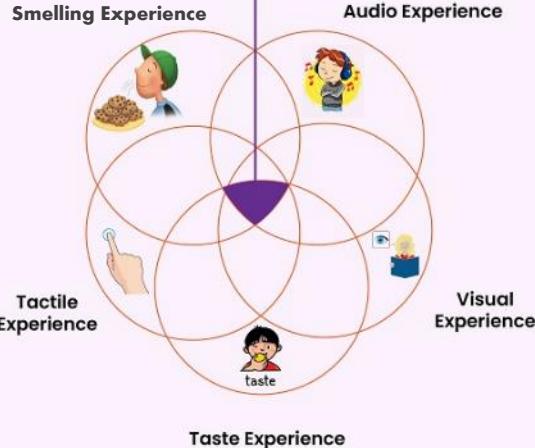


Tamales are one of the most popular Latin American Christmas foods. Tamales are corn-based and usually have meat in the middle. This comfort food brings families together for Christmas.



IRAN: Nowruz, the Persian New Year, takes place in March. The foods eaten are specifically chosen to evoke spring and renewal and welcome the coming year.

How to Evaluate your food/ drink



Y9 Food Knowledge Organiser

Popular food around the world

CHINA / 中国



Eating traditional Chinese food: Dumplings, fish, rice cakes, dim sum, green onion cakes, sweet rice balls, whole fish, chicken or crab and spring rolls. These foods are believed to bring good luck and prosperity.

Corn is the most eaten food and ingredient in Mexico. It is the base ingredient of tortillas, used for the preparation of tacos, quesadillas, and other dishes.

MEXICO / México



Ackee, Jamaica's national fruit, is sautéed with salt fish (cod) fish, onions, tomato, sweet pepper, and other seasonings after being boiled

JAMACIA



The national dish of Ukraine is red borscht, a well-known beet soup. However, varenyky (boiled dumplings) and a type of cabbage roll known as holubtsi are also national favourites

UKRAINE / Україна



Rice is the staple food of India. It is a rich source of carbohydrates mainly starch. It is the most widely consumed staple food for a large part of the world's human population, especially in Asia.

INDIA / भारत



Germans are known for their love of pork. Some popular dishes include schnitzel, which is a breaded and fried pork cutlet, and bratwurst, a type of sausage.

GERMANY / DEUTSCHLAND



Traditional Nigerian foods include maiz, yams, cassava, and plantains. Typical Nigerian meals are tomato stew, porridge, soups such as egusi soup, and jollof rice.

NIGERIA / Naijerya



Health and Safety in the

Risks in a kitchen

Fires	Gas, open flames
Cuts	Knives / sharp objects
Burns	Ovens / heat
Scalds	Boiling water / steam
Slips	Spillages
Trips and falls	Objects on the floor

Hazards in a kitchen

FOOD	TIME
ACIDITY	OXYGEN
MOISTURE	TEMPERATURE

Making Dough

Step 1
Combine flour, yeast and sugar in a large bowl. Stir in salt. Make a well in the centre. Add milk and butter.



Step 4
Punch down the centre of the dough with your fist. Turn onto a lightly floured surface. Knead for 2 minutes or until the dough is elastic and has returned to its original size.

Step 2
Use a wooden spoon to stir the mixture until well combined, then use your hands to bring the dough together in the bowl. Put onto a lightly floured surface and knead for 10 minutes or until the dough is smooth and elastic.

Step 3
Brush a large bowl with olive oil to grease. Place the dough in the bowl and cover with a damp tea towel. Set aside in a warm, draught-free place to prove for 45 minutes-1 hour or until the dough has almost doubled in size.

How does Bacteria Grow?

Bacteria need this to Multiply

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Personal Hygiene



- A Remove jewellery including watches
- B Nails kept short and clean
- C Hands should be dried
- D Food should not be handled when ill
- E Aprons should be worn when handling food
- F Cuts and wounds must be covered with a blue plaster
- G Hands must be washed
- H Food should not be handled for long periods of time

Interested in continuing Catering and Hospitality at GCSE? Speak to Mr. Lambert