MINISTRY OF EDUCATION

HOME ECONOMICS

For Senior High Schools

TEACHER MANUAL

YEAR 1 - BOOK 2

NATIONAL COUNCIL FOR CURRICULUM & ASSESSMENT OF MINISTRY OF EDUCATION

MINISTRY OF EDUCATION

REPUBLIC OF GHANA

Home Economics

For Senior High Schools

Teacher Manual

Year One - Book Two

NATIONAL COUNCIL FOR CURRICULUM & ASSESSMENT OF MINISTRY OF EDUCATION

HOME ECONOMICS TEACHER MANUAL

Enquiries and comments on this manual should be addressed to:
The Director-General
National Council for Curriculum and Assessment (NaCCA)
Ministry of Education
P.O. Box CT PMB 77
Cantonments Accra

Telephone: 0302909071, 0302909862
Email: info@nacca.gov.gh
website: www.nacca.gov.gh

mastercard foundation

T-TEL
Transforming Teaching, Education & Learning

CONTENTS

INTRODUCTION

The National Council for Curriculum and Assessment (NaCCA) has developed a new Senior High School (SHS), Senior High Technical School (SHTS) and Science, Technology, Engineering and Mathematics (STEM) Curriculum. It aims to ensure that all learners achieve their potential by equipping them with 21st Century skills, competencies, character qualities and shared Ghanaian values. This will prepare learners to live a responsible adult life, further their education and enter the world of work.

This is the first time that Ghana has developed an SHS Curriculum which focuses on national values, attempting to educate a generation of Ghanaian youth who are proud of our country and can contribute effectively to its development.

This Book Two of the Teacher Manual for History covers all aspects of the content, pedagogy, teaching and learning resources and assessment required to effectively teach Year One of the new curriculum. It contains information for the second 12 weeks of Year One. Teachers are therefore to use this Teacher Manual to develop their weekly Learning Plans as required by Ghana Education Service.

Some of the key features of the new curriculum are set out below.

Learner-Centred Curriculum

The SHS, SHTS, and STEM curriculum places the learner at the center of teaching and learning by building on their existing life experiences, knowledge and understanding. Learners are actively involved in the knowledge-creation process, with the teacher acting as a facilitator. This involves using interactive and practical teaching and learning methods, as well as the learner's environment to make learning exciting and relatable. As an example, the new curriculum focuses on Ghanaian culture, Ghanaian history, and Ghanaian geography so that learners first understand their home and surroundings before extending their knowledge globally.

Promoting Ghanaian Values

Shared Ghanaian values have been integrated into the curriculum to ensure that all young people understand what it means to be a responsible Ghanaian citizen. These values include truth, integrity, diversity, equity, self-directed learning, self-confidence, adaptability and resourcefulness, leadership and responsible citizenship.

Integrating 21st Century Skills and Competencies

The SHS, SHTS, and STEM curriculum integrates 21st Century skills and competencies. These are:

- **Foundational Knowledge:** Literacy, Numeracy, Scientific Literacy, Information Communication and Digital Literacy, Financial Literacy and Entrepreneurship, Cultural Identity, Civic Literacy and Global Citizenship
- **Competencies:** Critical Thinking and Problem Solving, Innovation and Creativity, Collaboration and Communication
- **Character Qualities:** Discipline and Integrity, Self-Directed Learning, Self-Confidence, Adaptability and Resourcefulness, Leadership and Responsible Citizenship

Balanced Approach to Assessment - not just Final External Examinations

The SHS, SHTS, and STEM curriculum promotes a balanced approach to assessment. It encourages varied and differentiated assessments such as project work, practical demonstration, performance assessment, skills-based assessment, class exercises, portfolios as well as end-of-term examinations and final external assessment examinations. Two levels of assessment are used. These are:

- Internal Assessment (30%) – Comprises formative (portfolios, performance and project work) and summative (end-of-term examinations) which will be recorded in a school-based transcript.

- External Assessment (70%) – Comprehensive summative assessment will be conducted by the West African Examinations Council (WAEC) through the WASSCE. The questions posed by WAEC will test critical thinking, communication and problem solving as well as knowledge, understanding and factual recall.

The split of external and internal assessment will remain at 70/30 as is currently the case. However, there will be far greater transparency and quality assurance of the 30% of marks which are school-based. This will be achieved through the introduction of a school-based transcript, setting out all marks which learners achieve from SHS 1 to SHS 3. This transcript will be presented to universities alongside the WASSCE certificate for tertiary admissions.

An Inclusive and Responsive Curriculum

The SHS, SHTS, and STEM curriculum ensures no learner is left behind, and this is achieved through the following:

- Addressing the needs of all learners, including those requiring additional support or with special needs. The SHS, SHTS, and STEM curriculum includes learners with disabilities by adapting teaching and learning materials into accessible formats through technology and other measures to meet the needs of learners with disabilities.
- Incorporating strategies and measures, such as differentiation and adaptative pedagogies ensuring equitable access to resources and opportunities for all learners.
- Challenging traditional gender, cultural, or social stereotypes and encouraging all learners to achieve their true potential.
- Making provision for the needs of gifted and talented learners in schools.

Social and Emotional Learning

Social and emotional learning skills have also been integrated into the curriculum to help learners to develop and acquire skills, attitudes, and knowledge essential for understanding and managing their emotions, building healthy relationships and making responsible decisions.

Philosophy and vision for each subject

Each subject now has its own philosophy and vision, which sets out why the subject is being taught and how it will contribute to national development. The Philosophy and Vision for History is:

Philosophy: Learners can understand the historical past as a holistic template of change and continuity to develop and progress in life, as well as forecast future desired goals to solve problems of local and global significance.

Vision: A learner with relevant historical skills and competencies capable of critically examining historical records and exploring scientific details to solve problems of local and global relevance.

SUMMARY SCOPE AND SEQUENCE

S/N	STRAND	SUB-STRAND	YEAR 1			YEAR 2			YEAR 3		
			CS	LO	LI	CS	LO	LI	CS	LO	LI
1.	Management in Living	Management Principles for Quality Living	2	2	6	2	2	7	1	1	2
		Responsible Family Living	2	2	6	2	2	5	1	1	7
2.	Clothing and Textiles	Psychosocial Aspect of Clothing	2	2	8	1	1	1	1	1	1
		Textiles in Clothing	1	1	2	1	1	3	1	1	3
		Clothing and Textiles Production Technology	1	1	5	1	1	6	1	1	4
3.	Food and Nutrition	Food for Healthy Living	2	2	7	3	3	7	2	2	5
		Food Production Technology	2	2	7	3	3	8	3	3	8
Total			**12**	**12**	**41**	**13**	**13**	**37**	**10**	**10**	**30**

Overall Totals (SHS 1 – 3)

Content Standards	**35**
Learning Outcomes	**35**
Learning Indicators	**108**

SECTION 5: FOOD PRODUCTION

Strand: **Foods and Nutrition**

Sub-Strand: Food Production Technology

Learning Outcome: *Plan and design the food laboratory layout*

Content Standard: Demonstrate knowledge and understanding of innovative ways of planning and using food laboratories.

INTRODUCTION AND SUMMARY SECTION

This section of the Teacher Manual covers Food Production Technology, which is the second sub-strand of Food and Nutrition. This section is targeted to provide learners with a comprehensive understanding of the interplay between food production, nutritional science and human health to promote healthy growth and the development of the individual, the family and society. The thematic areas to be covered under Food Production Technology include the following: comparison of various food laboratories, evaluation of the factors that affect the planning of food laboratories, ways of redesigning food laboratories, ways of ensuring hygiene in food laboratories, types of beverages and their uses, analysis on enriching and fortifying beverages and experiment with beverage production.

The weeks covered by the section are:

Week 13: Types of food laboratories, factors that affect the planning of food laboratories and ways of re-designing a food laboratory.

Week 14: Types of beverages and their uses, how to enrich or fortify beverages.

Week 15: Experiment with beverage production: Non-alcoholic.

Week 16: Experiment with beverage production: Alcoholic.

Week 17: Ways of ensuring hygiene in the food laboratory.

SUMMARY OF PEDAGOGICAL EXEMPLARS

The teacher is encouraged to adopt group work (mixed-ability and mixed-gender), structured talk for learning and problem-based learning approaches, which consider the use of samples, charts, videos, posters, etc., on Food Production Technology. The focus of these activities should be on food production, nutritional science and human health, to promote healthy growth and development of the individual, family and society. The adoption of experiential learning approaches, where students are assigned to do projects and present their findings in class, could also be considered. Last but not the least, the teacher should incorporate GESI, SEN, SEL, the 21st Century skills, National Core Values and ICT in the lesson delivery to make the lesson learner cantered.

ASSESSMENT SUMMARY

To evaluate learners' knowledge understanding and skills on the concepts in this section, there is the need for the teacher to use varying assessment strategies to differentiate among the various levels of Depth of Knowledge (DoK), as outlined in the Home Economics Teacher Manual and SHS/SHTS/STEM Curriculum. It is equally important to align the Assessment Activities with the content standard, learning indicators and the pedagogical activities. As a guide, specific examples of the assessment tasks have been outlined in this section to assist the teacher.

Week 13

Learning Indicators:

1. *Compare the types of food laboratories.*
2. *Evaluate the factors that affect the planning of food laboratories.*
3. *Suggest ways of re-designing a food laboratory.*

Theme or Focal Area : Food Laboratory

Key Concepts

A food laboratory is a combined facility that serves both as a laboratory for food testing and analysis and as a kitchen for food preparation and cooking. This type of facility is commonly found in research institutions, food manufacturing companies, culinary schools and other establishments where there is a need for both food analysis and food preparation activities.

1. **The functions of a food laboratory**

   The food laboratory serves essential functions related to the following:

   a) Food safety: This ensures that the food products meet safety standards and are safe for consumption

   b) Quality control: This practice takes consideration of the nutritional content, taste, texture, colour and aroma to ensure that the food meets specific quality standards and customer expectations.

   c) Product development and research: This involves the development of new food products or the improvement of existing ones. They research ingredients, formulations and cooking techniques to create innovative and appealing food items.

   d) Sensory evaluation: Food laboratories conduct sensory evaluations to assess the taste, texture, appearance and overall sensory experience of food products. This information helps in refining recipes and understanding consumer preferences.

   e) Shelf-life determination: This involves monitoring the product's quality over time to ensure it remains safe and retains its desired attributes during storage.

2. **Types of food laboratories**

   Food laboratories are specialised facilities that focus on preparation, cooking serving, testing and analysing various aspects of food products. There are several types of food laboratories, each with its specific focus and purpose. These include:

   a) Kitchen laboratory

   b) Microbiological laboratories

   c) Chemical analysis laboratories

   d) Nutritional analysis laboratories

   e) Sensory evaluation laboratories, etc.

Sample Kitchen laboratories

Traditional food laboratory

Modern food laboratory

Kitchen laboratory

It is a dedicated space or room in a home, restaurant, hotel or other food establishments where food is prepared, cooked and often served. It is a central part of any place that deals with food and plays a crucial role in food preparation and service. Kitchen laboratories vary in size, layout and equipment based on their purpose and the scale of food operations. The major zones in the kitchens are:

i. **Food preparation area:** This is where ingredients are washed, chopped, sliced and prepared before cooking. It typically includes work surfaces, cutting boards and sinks for food handling.

ii. **Cooking area:** This is where the actual cooking of food takes place. It consists of stoves, ovens, grills, fryers and other cooking appliances required to prepare different types of dishes.

iii. **Refrigeration and storage:** They have refrigerators and freezers to store perishable ingredients and finished food products. They also have shelves, cabinets and pantries for dry storage of non-perishable items and kitchen utensils.

iv. **Utensils and tools:** They are equipped with a variety of utensils and tools, including pots, pans, knives, cutting boards, measuring cups and mixing bowls, essential for cooking and food preparation.

v. **Ventilation system:** They typically have a ventilation system to remove smoke, odour and heat generated during cooking. This ensures a comfortable and safe working environment for kitchen staff.

vi. **Dishwashing area:** They have a designated area for washing and sanitising dishes, utensils and cooking equipment.

Note: *The various types of laboratories can be classified as Traditional and Modern Food Laboratories.*

Traditional food laboratory

Advantages	Disadvantages
Simple to construct	Inadequate storage space
Easy to purchase the tools and equipment	Poor ventilation
	Walls become dirty due to smoke

Modern food laboratory

Advantages	Disadvantages
Use advanced equipment and tools	Expensive to buy tools and equipment
Well organised equipment	Complexity in maintenance of tools and equipment

Key Tasks

1. Explain the concept of a food laboratory and the types of food laboratory (orally or written).
2. List the functions of food laboratories in food production.
3. Describe the zones/layout of a food laboratory of your choice.
4. Surf the internet and other sources for further information on the types of food laboratories and classify them using tables, charts, concept maps and albums.

Pedagogical Exemplars

Teacher Activity

Put learners in mixed-ability/gender/cultural/ethnic groups and ask them to discuss the concept of food laboratories and the types of food laboratories observed in their environment. Provide learners with appropriate learning materials. Groups should share their findings with their classmates. Promote peer tutoring and encourage tolerance of diverse opinions during presentations and discussions. To ensure that learners have understood the concept, teachers should guide learners in their discussions of the subject. Learners who are not actively participating should receive direct instruction and probing questions to evaluate their comprehension. Those who demonstrate a high level of understanding should be tasked with comparing different types of food laboratories.

1. **Experiential Learning/Group Work**

   Provide learners with appropriate learning materials. They should work in groups to share ideas and discuss the concept of food laboratories and types of food laboratories. Groups should share their findings with their classmates. Teachers should ask probing questions to assess learners' understanding of the concept. The teacher should encourage learners in their group to visit any food establishment in their community to observe and gather information on the following and write a report for presentation:

   a) The types of food laboratory
   b) The food laboratory layout
   c) The tools and equipment used in the food laboratory
   d) The types of food prepared, personal practices and environmental and hygiene practices used in the food laboratory

   During group presentations, the types of questions asked will reflect the amount of support required or the level of stretch required for individual learners. For example,

   a. *List the different types of food laboratories. Targeted at learners approaching proficiency.*
   b. *Explain the purpose of the different types of food laboratories. Targeted at learners who are proficient and have a clear understanding and ability to perform tasks.*

c. *Classify the types of food laboratories and their purpose using tables and or concept maps. Targeted at those working at a high level of understanding where they are encouraged to justify their responses.*

2. **Structured Talk for Learning**

Give learners five minutes to think individually about the types of tools and equipment used in different food laboratories that they have observed within their environment. Put learners in mixed-ability and mixed-gender groups and encourage them to discuss or share their ideas with their group members. Invite groups to share their ideas with the whole class. The types of questions asked will reflect the amount of support required or the level of stretch required for individual learners. For example,

a. *Describe the tools and equipment used in a traditional food laboratory. Targeted at learners approaching proficiency.*

b. *Reflect on a traditional and modern food laboratory and describe the tools and equipment that can be found in each one. Targeted at learners who are proficient and have a clear understanding and ability to perform tasks.*

c. *Consider the various types of food laboratories and describe the functions of four tools and equipment commonly found in each type. This task is designed for those with a high level of understanding where they are encouraged to consider the purpose of different food laboratories and the tools and equipment required to run them.*

Key Assessment

The teacher should focus on formative assessments by choosing from the following exemplars or creating their own formative assessment activities.

DoK Level 1: State at least two functions of food laboratories in food production.

DoK Level 2:

a) Explain the concept of food laboratories and give at least two examples.

b) Describe at least three zones/layouts in a kitchen laboratory.

DoK Level 3:

a) Compare at least three types of food laboratories and produce a report for feedback using different presentation modes.

b) Make an album of traditional and modern food laboratories of your choice.

Theme or Focal Area : Factors that affect the planning of food laboratories

Key Concepts

The planning of a food laboratory is a complex process that requires careful consideration of various factors to ensure its efficiency, functionality and compliance with industry standards. Some factors that can significantly inform the planning of a food laboratory include:

1. Purpose and scope: The intended purpose and scope of the food laboratory will drive its design and layout. Whether it is focused on food preparation and cooking, food safety testing, quality control, research and development, or a combination of functions, this will influence the selection of equipment and space requirements.

2. Building infrastructure: The physical infrastructure of the building or space where the food laboratory will be housed is essential. It must have the necessary utilities, such as water, electricity, ventilation and waste disposal systems, to support the laboratory's operations.

3. Space and layout: The size and layout of the laboratory space will impact workflow efficiency and safety. Factors such as the arrangement of workstations, equipment placement and the flow of samples through the laboratory need careful consideration.
4. Equipment selection: Choosing appropriate laboratory equipment is critical. The selection should be based on the specific testing and analysis requirements, as well as budget constraints. Proper equipment maintenance and calibration should also be factored in.
5. Safety and security: Ensuring the safety of laboratory personnel and maintaining the security of the laboratory and its data are top priorities. Safety measures, such as fume hoods, emergency eyewash stations and safety training, should be incorporated into the laboratory plan.

Factors to consider when planning food laboratories for family use

Socio-Cultural Factors	Economic Factors
Family needs	Family budget
Fuel	Size and shape of the food laboratory
Position of doors and windows	Equipment and tools
Functions of the food laboratory	Care and maintenance of the food laboratory
Environment	

Key Task

Discussions and presentations on the factors that affect food laboratory planning

Pedagogical Exemplars

Teacher Activity

Organise learners into diverse groups based on ability/ gender/ culture and /or ethnicity and have them discuss the factors that affect food laboratory planning, using provided learning materials. Each group should present their findings to the class, fostering peer tutoring and encouraging respect for different viewpoints during presentations and discussions. Teachers should guide the discussions to confirm understanding among learners. Learners who do not actively participate should be given direct instruction and probing questions to assess their understanding, while those with a higher grasp should be given challenging tasks.

1. **Group Work/Collaboration**

   Provide learners with appropriate learning materials. Learners should work in groups to share ideas and discuss factors that affect food laboratory planning. Groups should share their findings with the whole class. Teachers should ask probing questions to assess learners' understanding of the concept. For example,

   a. *Outline three factors that affect food laboratory planning. Targeted at learners approaching proficiency.*
   b. *Describe three factors that inform food laboratory planning and their influence on the process. Targeted at learners who are proficient and have a clear understanding and ability to perform tasks.*
   c. *Consider the various types of food laboratories and outline the factors that are most important in the planning process. This task is designed for those with a high level of understanding where they are encouraged to justify their responses, etc.*

Key Assessment

The teacher should focus on formative assessments by choosing from the following exemplars or should create their own formative assessment activities.

DoK Level 2: Outline at least three factors that affect food laboratory planning.

DoK Level 4: What factors do you consider most important when choosing and planning a food laboratory? Please rank the following factors from most important (1) to least important (5) and give justification for your ranking:

a) Location and accessibility

b) Equipment and technology available

c) Size and layout of the laboratory

d) Safety and hygiene standards

e) Budget and funding availability

Theme or Focal Area : Re-designing a Food Laboratory

Key Concepts

1. **Re-designing/renovation/refurbishment of a food laboratory**

   Renovating/refurbishing an existing food laboratory can be complex and rewarding. The goal is to create a modern, efficient and safe space that complies with industry standards and regulations. The steps include:

   a. **Changing of layout and flow:** Optimize the layout and workflow to maximise efficiency. Consider the proximity of different workstations, sample handling areas and storage spaces to minimise unnecessary movement and potential cross-contamination

   b. **Budgeting and planning:** Develop a comprehensive budget that includes not only construction costs but also equipment, furniture and other essential elements. Plan the renovation timeline carefully, considering any potential disruptions to laboratory operations.

   c. **Flooring and walls:** Select materials for the flooring and walls that are easy to clean and sanitize to maintain a hygienic environment. Seamless and non-porous surfaces are ideal for food laboratories.

   d. **Lighting:** Proper lighting is crucial in a laboratory setting. Use adequate and suitable lighting to ensure accuracy in testing and minimise eye strain for laboratory staff.

2. **Reasons for re-designing the food laboratory**

   Re-designing a food laboratory allows for improvements in various aspects. It is essential to carefully plan and execute the re-design process to achieve the desired outcomes including:

   a. Promoting safety and hygiene

   b. Promote efficiency and productivity

   c. Ensure compliance and adaptability to changing needs.

   d. Promote comfort of use

   e. Easy care and maintenance

Pedagogical Exemplars

Teacher Activity

Arrange learners into mixed groups by ability, gender, culture or ethnicity, and have them observe pictures or videos of different food laboratories and suggest ways of re-designing local food laboratories to make them user-friendly. Each group should share their insights with the class, promoting peer

learning and encouraging acceptance of various perspectives during presentations and discussions. Teachers should facilitate these discussions to ensure understanding among all learners. Learners who are less engaged should receive personalised instruction and targeted questions to evaluate their understanding, while those who demonstrate advanced knowledge should be assigned more complex tasks.

1. **Experiential/Collaborative Learning**

   Provide learners with appropriate learning materials, including specific case studies of food laboratories that need to be redesigned. An example of a case study:

   A commercial restaurant has expanded due to an increase in customers. The layout and flow are no longer suitable or sufficient to serve the number of customers. The owners need to build an extension to the kitchen area and increase the number of workstations.

   Learners should work in groups to discuss the requirements for the design process and present their findings to the whole class. They should prepare a presentation to share their findings with the whole class. Teachers should ask probing questions to assess learners' understanding of the concept. For example,

   a. *State three reasons for the re-design of a food laboratory. Targeted at learners approaching proficiency.*
   b. *Reflect on the presentation and share your views on at least three ways of re-designing the food laboratory to suit the needs of the restaurant. Targeted at learners who are proficient and have a clear understanding and ability to perform tasks.*
   c. *Discuss the budget requirement and challenges the restaurant management may face in re-designing the kitchen. This task is designed for those with a high level of understanding where they are encouraged to justify their responses, etc.*

2. **Group Work**

   In addition, each group of learners is to design their dream or ideal food laboratory with a well-labelled layout. Learners are to exhibit their designed food laboratories for a gallery walk and peer appraisal.

Key Assessment

The teacher should focus on formative assessments by choosing from the following exemplars or should create their own formative assessment activities. Reflecting on the presentation and discussion made in class:

DoK Level 3: Reflect on the presentation on the proposed re-design of a food laboratory and explain why it is necessary to ensure a high-efficiency ventilation system.

DoK Level 4: Scenario

Imagine that your school has recently received a grant or money to re-design its food laboratory. The current lab is outdated, lacking both modern equipment and an efficient layout, which hampers the learning experience. As a part of the redesign project, your group has been invited to participate in a planning committee alongside teachers and administrators. The goal is to create a more functional and inspiring environment for culinary education.

Questions:

Based on the scenario above, which of the following would be the most effective approach to ensure the redesigned food laboratory meets educational and functional needs? Justify the reasons for your choice.

a) Survey students and teachers to identify the most frequently used equipment and design the layout to improve accessibility and workflow.

b) Focus on acquiring the latest technology in food preparation and preservation to ensure students are trained on modern and industry-standard equipment.

c) Implement an eco-friendly design that utilises sustainable materials and energy-efficient appliances to promote environmental responsibility.

d) Design the lab exclusively based on the feedback from culinary arts teachers, ensuring that it is tailored to the specific needs of the curriculum they teach.

Week 14

Learning Indicators:

1. *Discuss the types of beverages and their uses.*
2. *Analyse how to enrich or fortify beverages.*

Theme or Focal Area: Types of Beverages

Key Concepts

1. **The concept of beverages**

   Beverages are liquid substances that are consumed to quench thirst or for pleasure. They come in a wide variety of types, catering to different tastes and preferences. The beverages are classified under the following types:

   a. **Alcoholic Beverages:** These beverages are drinks that contain ethanol (alcohol) as the primary psychoactive ingredient. They are produced through the fermentation and/or distillation of grains, fruits or other natural ingredients. Alcoholic beverages are popular for social, cultural and recreational purposes, but they should be consumed responsibly due to their potential for intoxication and negative health effects when consumed in excess. They include soft and hard liquor such as beer, wine and spirits.

Alcoholic beverages

b. Non-alcoholic Beverages: These beverages are drinks that do not contain alcohol or have very low alcohol content or stimulants. These beverages are popular for hydration, refreshment and enjoyment. They include water, juices: soft drinks, coffee, smoothies and milk.

2. Uses of beverages

Beverages serve various purposes and are used for a wide range of reasons. The uses of beverages depend on their types and properties. Here are some common uses of beverages:

a. **Hydration:** One of the primary uses of beverages is to hydrate the body. Water and other hydrating beverages help maintain the body's fluid balance and prevent dehydration.
b. **Quenching thirst:** Beverages, especially cold and refreshing ones such as water, juice, lemonade and iced tea, are used to quench thirst and provide relief on hot days.
c. **Nutrition:** Many beverages, such as milk, fruit juices and smoothies, provide essential nutrients, including vitamins, minerals and antioxidants, which contribute to overall nutrition.
d. **Energy boost:** Beverages containing caffeine, such as coffee and energy drinks, are used to provide a quick energy boost and increase alertness.
e. **Social enjoyment:** Beverages, including coffee, tea, soft drinks and cocktails, are often enjoyed in social settings, such as gatherings, parties and celebrations.

3. Factors to consider when selecting beverages

These factors may vary depending on individual preferences, dietary needs and health goals. These are some important factors to consider when choosing beverages:

a. **Nutritional content:** Check the nutritional information on the label to assess the calories, sugar content, vitamins, minerals and other nutrients present in the beverage.
b. **Sugar content:** Be mindful of the sugar content in beverages, especially in soft drinks, fruit juices and flavoured beverages.
c. **Health conditions:** Consider any health conditions or medical considerations.
d. **Environmental impact:** Consider the environmental impact of the beverage's packaging and production.

Key Tasks

1. Developing concept maps and discussions on beverages and their types
2. Discussions on the functions and uses of beverages
3. Explanations of the factors to consider when selecting beverages
4. Surf the internet and other sources for further information on the types of beverages, beverage production and beverage service.

Pedagogical Exemplars

Teacher Activity

Arrange learners into mixed groups by ability, gender, culture or ethnicity and have them brainstorm on the meaning of beverages. Guide learners in their groups to surf the internet or read text to identify the types, functions and uses of beverages. Each group should share their insights with the class, promoting peer learning and encouraging acceptance of various perspectives during presentations and discussions. Teachers should facilitate these discussions to ensure understanding among all learners. Learners who are less engaged should receive personalised instruction and targeted questions to evaluate their understanding, while those who demonstrate advanced knowledge should be assigned more complex tasks.

1. **Group Work/Collaborative Learning**

   Provide learners with appropriate learning materials. Learners should work in groups to share ideas and discuss the types, functions and uses of beverages. Groups should share their findings with the whole class. Teachers should ask probing questions to assess learners' understanding of the concept. For example:

   a) *Classify the following drinks into alcoholic and non-alcoholic categories: beer, wine, coffee, whiskey and Fanta. Targeted at learners approaching proficiency.*

   b) *Outline three factors that may be considered when selecting a beverage to consume. Targeted at learners who are proficient and have a clear understanding and ability to perform tasks.*

   c) *Explain the use of beverages in social settings. What purposes do they serve beyond consumption? This task is designed for those with a high level of understanding where they are encouraged to justify their responses*

Key Assessment

The teacher should focus on formative assessments by choosing from the following exemplars or should create their own formative assessment activities.

DoK Level 2:

a) Outline at least three types of beverages and their functions.

b) State at least three uses of beverages in meal service.

DoK Level 3:

Discuss at least two beverages that can be used for any of the following functions and explain why they are considered suitable for that specific function.

a) Wedding

b) Funeral

c) Outdooring

d) Annual family re-union

DoK Level 4: Make an album of local beverages in your community for peer assessment. Classify them into different categories and explain their uses i.e., health benefits, social enjoyment and factors to consider when selecting beverages

Theme or Focal Area : Beverage Production, Enrichment and Fortification

Key Concepts

1. **Beverage production, enrichment and fortification**

   Beverage production, enrichment and fortification are processes aimed at creating or enhancing the nutritional value, taste and overall quality of beverages. These processes involve the addition of various ingredients to improve the product's health benefits, flavour, texture and shelf life.

   a. **Beverage production:** The production involves the creation of various types of drinks, starting from raw materials to the finished product. The production process may vary depending on the type of beverage being made, such as soft drinks, fruit juices, tea, coffee, dairy-based beverages and alcoholic beverages.

   b. **Enrichment:** This refers to the addition of specific nutrients or substances to a beverage to increase its nutritional value. This is particularly common in juices, milk and certain health drinks. E.g., fruit juices may be enriched with added vitamins (such as vitamin C or vitamin D) to enhance their nutritional profile. Milk may be enriched with vitamins A and D or calcium to improve its health benefits.

   c. **Fortification:** Fortification is a process in which essential vitamins, minerals, or other bioactive compounds are added to beverages to address specific nutrient deficiencies in the population.

2. **Food substances used for beverage enrichment and fortification**

   The substances used for enrichment and fortification can vary based on the specific nutrients targeted and the type of beverage. These are some common food substances used for beverage enrichment and fortification:

   a. **Vitamins:** Various water-soluble and fat-soluble vitamins can be added to beverages. Vitamin C (ascorbic acid) is commonly added to fruit juices and drinks due to its antioxidant properties. Vitamin D is often added to milk and plant-based milk alternatives to support bone health. B-complex vitamins, such as thiamine, riboflavin, niacin, vitamin B6 and vitamin B12, may also be added to energy drinks and fortified beverages.

   b. **Minerals:** Minerals like calcium, iron, zinc, magnesium and potassium are frequently used for fortification. Calcium may be added to certain fruit juices or beverages to promote bone health. Iron is commonly added to some fortified drinks to address iron deficiency. Magnesium and potassium are minerals that may be added to sports and energy drinks to support electrolyte balance.

   c. **Proteins:** Protein-enriched beverages are popular among athletes and individuals looking to increase their protein intake. Proteins from sources like whey, casein, soy, or plant-based protein isolates can be added to smoothies, shakes and nutritional beverages.

   d. **Fibre:** Fibre can be added to certain beverages, such as fruit juices and smoothies, to increase their dietary fibre content. Soluble fibre from sources like psyllium husk or inulin is commonly used.

   e. **Omega-3 Fatty Acids:** Some fortified beverages, especially milk and milk alternatives, may contain added omega-3 fatty acids, such as docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA), which are essential for brain health.

f. **Plant Extracts:** Certain beverages may be enriched with plant extracts like green tea extract, ginseng, or echinacea for their potential health benefits.

3. **Functions of beverage enrichment and fortification**
   a. **Nutrition and flavour enhancement:** Flavour enhancement involves the addition of natural or artificial flavours to beverages to improve taste and appeal to consumers.
   b. **Texture and mouth-feel improvement:** Certain additives, such as stabilizers and emulsifiers are used in beverage production to improve texture and mouth-feel.
   c. **Shelf-life extension:** Preservatives and other additives may be used to extend the shelf life of beverages, ensuring that they remain safe and enjoyable for consumers over an extended period.

4. **Nutritional and food safety implications of beverage enrichment and fortification**
   Consumers should be aware of the potential benefits and risks associated with fortified beverages and make informed decisions based on their individual dietary needs and health conditions.

Nutritional implications	Food safety implications
Addressing nutrient deficiencies	Overconsumption
Improved nutritional profile	Quality control and stability
Promoting health benefits	Potential interactions
Convenience and handy	Allergies and sensitivities
Accessibility	Adverse effects

Key Tasks

1. Discussions on beverage production, enrichment and fortification.
2. Identification of food substances used for beverage enrichment, fortification and their functions.
3. Discussions on the nutritional and food safety implications of beverage enrichment and fortification.

Pedagogical Exemplars

Teacher Activity

Arrange learners into mixed groups by ability, gender, culture or ethnicity and have them discuss reasons for the enrichment and fortification of beverages. Guide learners in their groups to surf the internet or read text. Each group should share their insights with the class, promoting peer learning and encouraging acceptance of various perspectives during presentations and discussions. Teachers should facilitate these discussions to ensure understanding among all learners. Learners who are less engaged should receive personalised instruction and targeted questions to evaluate their understanding, while those who demonstrate advanced knowledge should be assigned more complex tasks.

Group Work/Collaborative Learning:

Provide learners with appropriate learning materials. Learners should work in groups to share ideas and discuss the reasons for beverage enrichment and fortification.

Ask groups to share their findings with the whole class. Teachers should ask probing questions to assess learners' understanding of the concept. For example,

a) *State the meaning of the following terms; beverage production, beverage enrichment and beverage fortification. Targeted at learners approaching proficiency.*

b) *Describe the food substances used for beverage fortification and enrichment.*

Targeted at learners who are proficient and have a clear understanding and ability to perform tasks.

c) *Describe the potential nutritional benefits and risks of beverage enrichment and fortification. This task is designed for those with a high level of understanding where they are encouraged to justify their responses*

Key Assessment

The teacher should focus on formative assessments by choosing from the following exemplars or should create their own formative assessment activities.

DoK Level 2:

a) Explain the concept of beverage enrichment and fortification and give at least two reasons for beverage enrichment/fortification.

b) Discuss at least two food substances that can be used for beverage enrichment, fortification and their functions.

DoK Level 3:

a) Analyse at least two ways beverages can be enriched or fortified to meet the nutritional needs of a specific group of people.

b) Discuss at least two nutritional and food safety implications of beverage enrichment and fortification.

Week 15

Learning Indicator: *Experiment with beverage production*

Theme or Focal Area : Steps and processes of enrichment and fortification of beverage production - Non-alcoholic beverages

Key Concepts

1. **The main steps in beverage production**

   The main steps include:

   a. Pre-preparation activities
      - Ingredient sourcing
      - Cleaning and processing of raw materials

   b. Preparation activities
      - Mixing or blending
      - Squeezing
      - Pasteurisation or sterilisation (if necessary)
      - Filtration

   c. Post preparation activities
      - Packaging
      - Cleaning and tidying up

2. **Producing, enriching and fortifying non-alcoholic beverages**

   This involves a series of steps to create beverages that are flavourful, nutritious and meet specific consumer preferences. The steps and processes involved in producing enriched and fortified non-alcoholic beverages include:

   a. **Selection of base ingredients:** Choose the main ingredients for the non-alcoholic beverage such as water, fruit juices or botanical extracts.

   b. **Processing and preparation:** Prepare the ingredients by cleaning, peeling and cutting fruits or vegetables.

   c. **Extraction:** Extract juices, pulps or concentrates from the chosen ingredients.

   d. **Blending and mixing:** Combine the extracted juices, pulps, concentrates and other ingredients in the desired proportions. Mix the ingredients thoroughly to create a uniform blend.

   e. **Sweetening and flavouring:** Add sweeteners such as sugar, honey or alternative sweeteners based on the desired level of sweetness. Incorporate natural or artificial flavours to enhance the taste profile of the beverage.

   f. **Enrichment and fortification:** Identify the nutritional elements to be added to the beverage such as vitamins, minerals, amino acids or antioxidants. Measure and add the desired nutrients to the beverage mixture.

   g. **Filtration and clarification:** Pass the beverage through filters to remove any solids, particles or impurities. Clarify the beverage to achieve a clear and visually appealing appearance.

   h. **Carbonation (for carbonated beverages):** Introduce carbon dioxide gas into the beverage to create carbonation and bubbles. Adjust the level of carbonation according to the desired effervescence.

Note: *Enrichment may involve adding vitamins, minerals or nutrients to improve the beverage's nutritional content. Fortification may include adding additional flavours or ingredients for functional benefits.*

Select fruits (oranges)

Squeeze oranges

Bottle orange juice

Key Tasks

1. Interview selected families in your community to find out what local beverage resources are available to individuals, families and societies.
2. Produce a work plan for preparing and enriching a local beverage.
3. Conduct experiments to prepare, enrich/fortify and package local beverages.

Pedagogical Exemplars:

Teacher Activity

Learners will observe the teacher or watch a video on how to prepare, enrich or fortify beverages using local ingredients

Put learners into groups in terms of their ability, gender, culture or ethnicity. The teacher will assign a local beverage to each group to produce and demonstrate how to enrich or fortify the beverage using local ingredients.

Teachers should provide each group with the necessary instructions, raw ingredients and resource materials, e.g., mixing jugs, stirrers and display glasses to produce and package the beverage.

Teachers should monitor the experimentation to provide support when necessary.

Learners will prepare the beverage and write down the procedures they followed.

Guide learners to package their alcoholic beverages appropriately and display them for appraisal.

The groups should prepare a presentation to the whole class and explain the experiment, including the ingredients required and procedures they followed to produce the beverage.

Experiential Learning/Group work:

Invite groups to present to the class how they used local ingredients to fortify their local beverage. Encourage groups to select different ways of presenting their work e.g., videos, power point, charts, written and exhibition. Ask each group to display a sample of their local beverage and explain to the class how they used the local ingredient to fortify it. Encourage learners to share ideas and ask questions for clarification. The teachers should ask probing questions to assess learners' understanding and provide constructive feedback on the process. Teachers should ask probing questions to assess learners' understanding of the concept. For example:

a) *List the main steps in beverage production. Targeted at learners approaching proficiency.*

b) *Describe the processes involved in beverage fortification and enrichment of non-alcoholic beverages. Targeted at learners who are proficient and have a clear understanding and ability to perform tasks.*

c) *Describe the potential nutritional benefits and risks of beverage enrichment and fortification. This task is designed for those with a high level of understanding where they are encouraged to justify their responses*

Key Assessment

The teacher should focus on formative assessments by choosing from the following exemplars or should create their own formative assessment activities:

DoK Level 2:

a) Write the recipe, the ingredients and their quantities, method, tools and equipment needed to prepare a local non-alcoholic beverage of your choice.

b) Produce a work plan to prepare and enrich/fortify a beverage of your choice using local food commodities.

DoK Level 3: Practical activities: Follow your work plan to prepare and package your selected local beverage for appraisal.

DoK Level 4: Reflect on the experiment conducted and write a report on the process of beverage enrichment and fortification.

Week 16

Learning Indicator: *Experiment with beverage production*

Theme or Focal Area : Steps and processes of enrichment and fortification of beverage production – Alcoholic beverages

Key Concepts

1. **Producing, enriching and fortifying alcoholic beverages**

   Producing, enriching, and fortifying alcoholic beverages involves several steps and processes to create products that meet desired quality, flavour and nutritional standards. The steps involved in producing enriched and fortified alcoholic beverages:

   i. **Selection of base ingredients:** Choose the base ingredients for the alcoholic beverage. This may include grains (e.g., barley, corn, rice), fruits or other raw materials.

   ii. **Milling and malting (if applicable):** Grains may undergo milling to break down the starches, making them accessible for fermentation.
   - Malting involves soaking and germinating grains to activate enzymes that convert starches into fermentable sugars.

   iii. **Mashing:** Combine the milled grains with water to create a mash.
   - Heat the mash to specific temperatures to facilitate the enzymatic conversion of starches into sugars.

   iv. **Fermentation:** Transfer the mash to a fermentation vessel.
   - Add yeast to the mash, which converts sugars into alcohol and carbon dioxide.
   - Monitor fermentation temperature and duration to control flavour and alcohol content.

   v. **Distillation (for distilled spirits):** Distil the fermented mash to separate alcohol from impurities.
   - Collect the distillate, which consists of different fractions with varying alcohol concentrations.

   vi. **Blending and flavouring:** Blend different batches or distillates to achieve the desired flavour profile. Add flavouring agents such as fruits, herbs, spices or botanicals, to enhance aroma and taste.

   vii. **Enrichment and fortification:** Determine the desired nutritional or functional attributes to be added to the beverage.

Note: *Enrichment may involve adding vitamins, minerals or nutrients to improve the beverage's nutritional content. Fortification may include adding additional alcohol, flavours or ingredients for functional benefits.*

Key Task

1. Search for further information on alcoholic beverages and conduct personal experiments to prepare, enrich and fortify different types of beverages.
2. Produce a work plan for preparing and enriching a local beverage
3. Conduct experiments to prepare, enrich/fortify and package local alcoholic beverages

Pedagogical Exemplars

Teacher Activity

Learners will observe the teacher or watch a video showing steps and processes of how to prepare, enrich or fortify alcoholic beverages using local ingredients.

Put learners into groups in terms of their ability, gender, culture and ethnicity. The teacher will assign an alcoholic beverage to each group to produce and demonstrate how to enrich or fortify the beverage using local ingredients.

Teachers should provide each group with the necessary instructions, raw ingredients and resource materials, e.g., mixing jugs, stirrers and display glasses to produce and package the beverage.

Teachers should monitor the experimentation to provide support when necessary.

Learners will prepare the alcoholic beverage and write down the procedures they followed.

Guide learners to package their alcoholic beverages appropriately and display them for appraisal.

The groups should prepare a presentation to the whole class and explain the experiment, including the ingredients required and procedures they followed to produce the beverage.

Experiential Learning /Structuring Talk for Learning Approaches:

Invite groups to present to the class how they used local ingredients to fortify their local alcoholic beverage. Encourage groups to select different ways of presenting their work, e.g., videos, power point, charts, written and exhibition. Ask each group to display a sample of their local beverage and explain to the class how they used the local ingredient to fortify it. Encourage learners to share ideas and ask questions for clarification. The teachers should ask probing questions to assess learners' understanding and provide constructive feedback on the process. Teachers should ask probing questions to assess learners' understanding of the concept. For example,

a) *List the main steps in beverage production. Targeted at learners approaching proficiency.*

b) *Describe the processes involved in beverage fortification and enrichment of non-alcoholic beverages. Targeted at learners who are proficient and have a clear understanding and ability to perform tasks.*

c) *Describe the potential nutritional benefits and risks of beverage enrichment and fortification. This task is designed for those with a high level of understanding where they are encouraged to justify their responses*

Key Assessment

The teacher should focus on formative assessments by choosing from the following exemplars or should create their own formative assessment activities.

DoK Level 2:

a) Write the recipe, the ingredients and their quantities, method, tools and equipment needed to prepare a local alcoholic beverage of your choice.

b) Produce a work plan to prepare and enrich/fortify a beverage of your choice using local food commodities.

DoK Level 3: Practical activities: follow your work plan to prepare and package your selected local beverage for appraisal. Write reports for class presentations and appraisals.

DoK Level 4: Reflect on the experiment conducted and write a report on the process of beverage enrichment and fortification

Week 17

Learning Indicator: *Discuss ways of ensuring hygiene in the food laboratory.*

Theme or Focal Area : Personal, food and environmental hygiene in the food laboratory

Key Concepts

Maintaining proper hygiene in a food laboratory is essential to ensure the safety and quality of food products, prevent cross-contamination, and create a healthy work environment. These are important hygiene practices to follow in a food laboratory.

1. **Personal Hygiene**

   Personal hygiene is extremely important for food laboratory workers. They must wear clean, protective clothing. Effective and regular handwashing is important to help prevent harmful bacteria from spreading from peoples' hands.




2. Food Hygiene in the Food Laboratory

Food hygiene includes the use of clean food commodities, proper cooking of food and proper storage of food

3. Environmental Hygiene in the Food Laboratory

Environmental hygiene in the food laboratory includes cleaning the working area thoroughly, proper disposal of garbage and regular washing of utensils.

Key Task

Organise a hygiene campaign advocacy to educate your peers on personal, food and environmental hygiene in promoting food safety and healthy living.

Pedagogical Exemplars

Teacher Activity

Engage learners to brain-write and share their knowledge on food hygiene. Teachers should ensure that they explain hygiene in food laboratories. Encourage learners to share ideas with others.

Group projects should be focused on at least three people of different ages and socio-cultural backgrounds and the teacher should provide case studies/ scenarios on which the learners base their research and projects. Provide constructive feedback and support to learners during and after the exercise.

There is a range of tasks within this section and learners who are not actively participating (AP) may need additional guidance in the form of direct instructions, modelling, targeted questions and the provision of information sources. Learners who exhibit a clear understanding and the ability to perform tasks independently (P) and (HP) should rise to the challenge of researching, analysing information and producing charts/diagrams, projects and presentations.

Talk for Learning:

Ask learners to use the brain-write/mingle to review their knowledge of food hygiene and how hygiene in food laboratories is managed. They will use a range of sources, e.g. videos, internet and other sources, to undertake the research and produce a report on their findings to present to the class as a group. The teachers should ask probing questions to assess learners' understanding and provide constructive feedback on the process. Teachers should ask probing questions to assess learners' understanding of the concept. For example,

a) *State why it is important to maintain hygiene in a food laboratory. Targeted at learners approaching proficiency.*

b) *Describe what is meant by personal, food and environmental hygiene. Targeted at learners who are proficient and have a clear understanding and ability to perform tasks.*

c) *Explain how to maintain good hygiene in food laboratories. This task is designed for those with a high level of understanding where they are encouraged to justify their responses*

Group Work:

Learners in groups should discuss how to maintain good hygiene in food laboratories. They should present their views to the whole class.

Guide learners in small groups (three) to organise a hygiene campaign advocacy to educate their peers on how to maintain personal, food and environmental hygiene in promoting food safety and healthy living.

Key Assessment

The teacher should focus on formative assessments by choosing from the following exemplars or should create their own formative assessment activities:

DoK Level 3:

a) Explain orally or in written format the following hygiene concepts:
   i. Personal hygiene
   ii. Food hygiene
   iii. Environmental hygiene

b) Discuss three ways of promoting hygiene in food laboratories.

c) Design a concept map to illustrate how hygiene practices in food laboratories affect food safety and quality.

Section Review

To conclude, the focus of Food Production Technology is to equip learners with a deep understanding of the critical links between food production, nutritional science and health outcomes. By addressing local contexts and integrating practical applications, learners will be prepared to make informed choices that contribute to individual and community well-being within the Ghanaian cultural and nutritional landscape.

Teaching/Learning Resources: From the Curriculum

- Flip charts on food laboratories
- Videos of types of food laboratories,
- Charts/pictures/posters of food laboratories
- Computers, projectors, cameras, smartphones (if possible)
- Cooking ranges
- Realia of enriched or fortified food
- Flip charts/pictures/posters on a variety of beverages
- Realia of beverage products
- Grains/cereals, fruits, cooking equipment

References

- Adigo, E. C., & Maddah, C, K. (2011). *Food and nutrition.* Kwadwoan Publishing: Accra
- NaCCA, (2023). *Draft Senior High School/ Senior High Technical School/Science Technology Engineering and Mathetics Curriculum for Home Economics.* Unpublished.
- Ministry of Education, (2010). *Teaching Syllabus for Food and Nutrition*. CRDD
- Leonardo Ai Image generator

SECTION 6: FAMILY LIVING

Strand: **Management in Living**

Sub-Strand: Management Principles for Quality Living

Learning Outcome: *Use the knowledge of the family system, roles and stages of the family life cycle to build healthy family relationships.*

Content Standard: Demonstrate knowledge and understanding of the concept of family life.

INTRODUCTION AND SUMMARY SECTION

Responsible Family Living is the second sub-strand of management in living in the Home Economics Teacher Manual for Senior High School/Senior High Technical School/Science Technology Engineering and Mathematics Curriculum. After going through this section, learners are expected to gain knowledge, understanding and skills necessary for creating and maintaining a healthy and well-functioning family unit. The section recognises the pivotal role of families in shaping societal values and aims to equip learners with the skills to relate effectively with individuals, families and society, by facing the responsibilities and challenges of daily life. The focal areas of this section include the concept of family, the role of families in the development of individuals, families and society, examining the different stages of the family life cycles and their implications, the relationships between families and society, the contribution of the family to the society and the contribution of the society to the family.

The weeks covered by the section are:

Week 18: The concept of family, the role of families in the development of individuals, families and society, the different stages of the family life cycle and their implications.

Week 19: The relationships between families and the society: contribution of family to the society.

Week 20: The relationships between families and the society: the contribution of the society to the family.

SUMMARY OF PEDAGOGICAL EXEMPLARS

The teacher could adopt group work (considering mixed-ability and mixed-gender), structured talk for learning and problem-based learning approaches, which consider the use of samples, charts, videos, posters, etc. on responsible family living. The focus of the activities should be on the concept of family; the role of families in the development of individuals, families and the society, examining the different stages of the family life cycles and their implications, the relationships between families and society, the contribution of family to the society and the contribution of the society to the family. The adoption of experiential learning approaches, where students are assigned to do projects and present their findings in class, could also be considered. The teacher should be opened to other pedagogical approaches outside what is mentioned in the section but relevant to the focal area to help in the lesson delivery. Last but not the least, the teacher should incorporate GESI, SEN, SEL, 21st Century skills, the Core National Values and ICT in the lesson delivery to make the lesson learner-centred.

ASSESSMENT SUMMARY

The teacher should use varying assessment strategies to assess learners' levels of Depth of Knowledge (DoK), as outlined in the Home Economics Teacher Manual and Senior High School /Senior High Technical School/Science Technology Engineering and Mathematics curriculum. It is equally noteworthy to align the assessment activities with the learning indicators, as well as the pedagogical exemplars, to create a link between the learning indicators, the pedagogical exemplars and the assessment strategies. As a guide, specific examples of the assessment tasks have been outlined in this section to assist the teacher.

Week 18

Learning Indicators:

1. *Explain the concept of family*
2. *Identify the role of families in the development of individuals, families and the society.*
3. *Examine the different stages of the family life cycle and their implications.*

Theme or Focal Area : Concept of Family

Key Concepts

A family is a group of people related either by blood, marriage or adoption. The purpose of the family is to maintain the well-being of its members and society. The types of families can take various forms and structures, reflecting the diverse nature of human relationships and societal changes.

These include:

a. **Nuclear family:** The nuclear family consists of a married or cohabiting couple and their children living together in one household. It is a traditional family structure and may include biological, adopted or stepchildren. Note that a single-parent family is a variation of the nuclear family system. In a single-parent family, one parent is responsible for raising and caring for the children without the presence of the other parent due to divorce, separation, death, or other circumstances.

b. **Extended family:** An extended family includes the nuclear family along with other relatives, living in the same household or maintaining close relationships.

Key Tasks

1. Explain the concept of family.
2. Surf the internet and other sources for information to explore the concept of family and the implications of changing social dynamics on family life.
3. Identify your ideal family type and its advantages and disadvantages.

Pedagogical Exemplars

Teacher Activity

Engage learners to brainstorm their experiences about the concept of family. Teachers should ensure that prompt and constructive feedback is given to support learners. Encourage learners to share ideas with others.

Group work should be focused on at least three learners of different ages and socio-cultural backgrounds and the teacher should provide a task that will require learners to role-play the concept of family. Provide constructive feedback and support to learners during and after the exercise.

There is a range of tasks within this section and learners who are not actively participating (AP) may need additional guidance in the form of direct instructions, modelling, targeted questions, and the provision of information sources. Learners who exhibit a clear understanding and the ability to perform tasks independently (P) and (HP) should rise to the challenge of researching, analysing information and producing charts/diagrams, projects and presentations.

1. **Talk for Learning**

   Ask learners to brainstorm their experiences about the concept of family. Learners share their experiences with their peers and the class.

2. **Group Work/Structuring Talk for Learning**

   Guide learners in groups using panel discussion strategies to explain the concept of family and types of family. Encourage learners to use culturally appropriate language during the group-level discussion. Teachers should ask probing questions to assess learners' understanding of the concept and provide constructive feedback on the process. For example,

   a) *Identify the main types of family. Targeted at learners approaching proficiency.*
   b) *Describe the main purpose of family. Targeted at learners who are proficient and have a clear understanding and ability to perform tasks.*
   c) *Compare and contrast a nuclear and extended family. This task is designed for those with a high level of understanding where they are encouraged to justify their responses*

Key Assessment

The teacher should focus on formative assessments by choosing from the following exemplars or should create their own formative assessment activities:

DoK Level 2: Briefly explain the concept of the different types of family.

DoK Level 3: Design a concept map to illustrate the different types of families.

DoK Level 4: Develop a family album/chart/poster depicting different family scenes/activities for exhibition and appraisal.

Theme or Focal Area: Role of Families in the Development of Individuals, Family and Society

Key Concepts

Families play a crucial role in the development of individuals, other families, and society as a whole. A stable and supportive family structure fosters healthy and well-adjusted individuals who are better equipped with knowledge, skills and values to contribute positively to their families, communities and society as a whole. Recognising and supporting the role of families is crucial for building healthy communities and creating a positive societal impact.

1. **Physiological role of the family:** The physiological role of families refers to the function families fulfil in meeting the physical and biological needs of their members to ensure their health, safety and overall well-being. These roles include:
   a. **Nutrition:** Families are responsible for providing nutritious food to their members to support their physical growth and development.
   b. **Shelter and safety:** Families provide a safe and secure home environment, protecting their members from external hazards and ensuring their physical safety.
   c. **Health care:** Families play a crucial role in maintaining the health of their members by arranging for healthcare services, regular medical check-ups, and necessary treatments when necessary. Families teach and promote good hygiene practices, such as regular bathing, handwashing and maintaining a clean living space, to prevent the spread of diseases.
   d. **Rest and sleep:** Families support the rest and sleep needs of their members, recognising the importance of adequate rest for physical and mental well-being.

2. **Social role of family:** The social role of families refers to the functions and contributions of families in society. Families play a vital role in shaping the social fabric, promoting socialisation, and fostering social stability. The social role of families encompasses various aspects, including:
   a. **Primary socialisation:** Families are the primary agents of socialisation, transmitting cultural values, norms, and behaviours to the younger generation. They teach children how to interact with others, develop social skills and navigate societal expectations.
   b. **Formation of identity:** Families provide a sense of belonging and identity to individuals. Family traditions, customs and shared experiences contribute to a person's sense of self and cultural identity.
   c. **Reproduction and continuity:** They facilitate the process of procreation and nurturing of future generations.
   d. Emotional support and well-being: Families offer emotional support, love and care, which are critical for the emotional well-being of individuals. Family members provide comfort, understanding and a sense of security.
   e. **Economic support and stability:** Families contribute to economic stability by providing financial support and resources to their members. Family members often share financial responsibilities and support each other during challenging times.

3. **Instrumental role of the family:** The instrumental role of families refers to the practical and functional tasks that family members perform to meet the material and physical needs of the family unit. In traditional gender roles, the instrumental role is typically associated with the male family members, as they are often responsible for providing financial support and making decisions related to practical matters. However, in modern families, the instrumental role can be shared by all family members, irrespective of gender. These instrumental roles of families include budgeting and financial planning:
   a. Families engage in budgeting and financial planning to manage income and expenses effectively
   b. Ensuring financial security
   c. Responsible financial decisions.

4. **Expressive role of family:** The expressive role of family refers to the emotional and social tasks that family members perform to nurture and support each other's well-being and interpersonal relationships. In traditional gender roles, the expressive role is often associated with female family members. However, in modern families, the expressive role can be shared by all family members, irrespective of gender. These include:
   a. **Emotional support:** Family members offer emotional support and understanding to each other during times of joy, sorrow and stress. They provide a safe space to express feelings and emotions openly.
   b. **Communication:** Families engage in open and effective communication, encouraging active listening and empathy to foster strong interpersonal connections.
   c. **Affection and love:** Family members show affection and love towards one another through verbal expressions, physical gestures and acts of kindness.
   d. **Conflict resolution:** Families work together to address conflicts and disagreements constructively, promoting healthy communication and understanding.
   e. **Celebrating achievements:** Families celebrate each other's accomplishments and milestones, reinforcing positive reinforcement and support.

5. **Supportive role of the family:** The supportive role of the family refers to the various ways in which family members aid, encourage and care for each other. These include:
   a. **Encouragement and motivation:** Family members encourage and motivate each other to pursue their goals and aspirations, fostering a positive and supportive environment.
   b. **Childcare and parental support:** Families support one another in parenting responsibilities, providing care and guidance to children and sharing parenting tasks.

c. **Practical help:** Family members offer practical help and assistance, such as running errands, helping with household chores, or providing transportation.

d. **Crisis management:** Families come together during crises or emergencies to support and solve problems collectively.

e. **Empathy and active listening:** Family members listen to each other's concerns and experiences with empathy and understanding.

6. **Traditional role of family members:** Traditional roles of family members often follow gender-based stereotypes that have been prevalent in many societies in the past. While these roles have evolved and become more flexible in modern times, it is essential to recognise that traditional roles may still exist in some cultures or households. These roles can vary significantly across different cultures and communities. Some common traditional roles of family members include:

   a. **Father:** Traditionally, the father is seen as the primary breadwinner and protector of the family. He is responsible for providing financial support, making important decisions and being the head of the household.

   b. **Mother:** The mother's traditional role is often associated with caregiving and nurturing. She takes care of the children, manages the household and provides emotional support to family members.

   c. **Children:** Children are expected to respect and obey their parents, follow their guidance, and contribute to household chores as they grow older.

   d. **Grandparents:** In many cultures, grandparents play an essential role in the family, offering wisdom, support and care for the younger generations.

   e. **Siblings:** Siblings may have roles that include supporting and looking out for each other, especially in larger families.

Key Tasks

1. Explain the different roles that families play.
2. Explain at least three roles of individual family members.
3. Organise a drama/ role play/video show on the various roles of the families to educate the school community members.

Pedagogical Exemplars

Teacher Activity

As a class activity, ask learners to reflect on the roles they perform within their families and share their experiences. Engage learners in groups to develop concept maps, mind maps or concept cartoons to illustrate the roles each member plays in promoting family growth and development and their related challenges. Monitor and provide support to each group when necessary.

Some learners who are approaching proficiency (AP) may need additional guidance in the form of direct instructions, questions and support. Learners who exhibit a clear understanding and the ability to perform tasks independently (P) and (HP) should be engaged in more challenging tasks.

1. **Managing Talk for Learning/Collaborative Learning Approaches**

   Learners share their experiences on the roles they perform in their families. Use probing questions to direct learners' thoughts. Learners in mixed ability/gender groups are to develop concept maps, mind maps or concept cartoons to illustrate the roles each member plays to promote family growth and development and their related challenges.

2. Experiential/Structuring Talk for Learning Approaches

Learners in pairs/pyramid groups discuss the various roles of the family (e.g., the physiological and social roles of the family). Support learners with videos, charts, slides or posters. Invite groups to role-play the various roles that families perform for peer assessment. Give prompt and constructive feedback and summarise the key points. Teachers should ask probing questions to assess learners' understanding of the concept and provide constructive feedback on the process. For example:

a) *State two physiological roles of the family. Targeted at learners approaching proficiency.*

b) *Outline the social roles of members of the nuclear family. Targeted at learners who are proficient and have a clear understanding and ability to perform tasks.*

c) *Reflect on the responsibilities of the father, mother and children in the home and give examples for each member of the nuclear family. This task is designed for those with a high level of understanding where they are encouraged to justify their responses*

Key Assessment

The teacher should focus on formative assessments by choosing from the following exemplars or should create their own formative assessment activities:

DoK Level 3:

a) Describe the role families play and their contribution to the development of the individual, family and society.

b) Identify the related challenges to the roles of families using concept maps, concept cartoons, mind maps or slides.

DoK level 4:

a) Describe at least four roles that families play in the development of the individual and society.

b) What is the influence of changing social dynamics on the gender roles of family members?

c) In groups (gender/cultural/friendship) organise an open forum to engage peers to share ideas on the following roles of the family:

i. Physiological role of the family
ii. The social role of family
iii. The instrumental role of the family
iv. Expressive role of family
v. Supportive role of the family
vi. Traditional roles of family members

Theme or Focal Area : Stages of Family Life Cycle

Key Concepts

The family life cycle is a concept that describes the various stages that a typical family goes through as it evolves and develops over time. Thus, the newly married stage, early parenthood, parenting school-age children, parenting teenagers, launching children, empty nest, ageing and retirement and later life. These stages of the family life cycle are classified as follows:

1. **Beginning stage:** the beginning stage of the family life cycle is a time of building a strong foundation for the relationship. The features of the beginning stage of the family life cycle include:
   a. **Marriage:** Adjustment to living together and coping with family life.
   b. **Establishing a home:** Exploring their shared values, goals and aspirations for the future.
   c. **Financial planning:** Strong sense of unity and responsibility.

2. **Expanding stage:** The expanding stage of the family life cycle is a time of significant growth and transformation as the couple embraces their roles as parents and the challenges and joys of raising children. This stage sets the foundation for the next phases of the family life cycle, such as parenting school-age children and parenting teenagers. The major features include:
   a. **Birth of children:** Pregnancy and childbirth
   b. **Parental roles and responsibilities:** Parenthood and parenting skills.
   c. **Adjustment period:** Childcare and education.
   d. **Shift in priorities:** Providing a stable and nurturing environment for children's growth and development.
   e. **Financial planning:** Reviewing financial situations and adjusting to accommodate the needs of the growing family.
   f. **Support system:** The couple may seek support from family, friends or parenting groups to navigate the new challenges they face as parents.

3. **Contracting stage:** This stage is also known as the "Launching Children" stage, which occurs when children reach adulthood and leave the family home to pursue their own lives, mostly through higher education, starting careers or getting married. This stage marks a significant transition for both parents and children as they adapt to a new family dynamic and redefine their roles and identities. The characteristics of this stage include:
   a. Children leave home for studies.
   b. Adolescence and adulthood life when children leave the family home for independent life.

4. **Empty nest stage:** This stage is a time of transition and adjustment for parents, as they redefine their roles and adapt to a new chapter in their lives. Some parents may embrace the newfound freedom, while others may find the changes challenging. It is an opportunity for personal growth and renewal as parents navigate the next phase of their lives. The main features of this stage include:
   a. **Children living independently:** The family home is now empty or may be occupied only by the parents
   b. **Emotional adjustment:** The period evokes a range of emotions for parents, pride and satisfaction in seeing the children become independent and successful. They may also experience grief, sadness or loss of purpose
   c. **Increased freedom:** Parents have more freedom and flexibility in their daily routines and lifestyles. They have more time for themselves and can focus on personal interests and hobbies.
   d. Reconnecting as a couple: The empty nest stage offers an opportunity for parents to reconnect as a couple. They can invest more time and energy in their relationship, travel together and explore shared interests.

e. **Career advancement or retirement:** Parents in the empty nest stage may experience career advancements or decide to retire, depending on their age and individual circumstances.

5. Survivor/ageing stages: This stage is a time when individuals and couples may experience significant life changes, both physically and emotionally. It can be a period of reflection, wisdom, and an opportunity to find meaning and fulfilment in later years. Many people find satisfaction in passing on their life experiences, values and wisdom to younger generations. The major characteristics include:
   a. **Caregiving and support:** In some cases, adult children may take on the role of caregivers for ageing parents, providing emotional, financial and practical support as the parents require more assistance.
   b. **Grandparenting:** Many individuals become grandparents during the ageing stage, bringing new joys and connections to the family.
   c. **Legacy and reflection:** Older adults often reflect on their lives, accomplishments and the legacy they want to leave behind for future generations.
   d. **Social support and community involvement:** Maintaining social connections and being involved in the community becomes crucial for overall well-being during the ageing stage.
   e. End-of-life planning: Individuals and couples in the ageing stage may consider end-of-life planning, including wills, living arrangements and medical decisions.
   f. **Coping with loss:** The ageing stage may involve coping with the loss of friends, family members or spouses. Grief and bereavement support may become essential.

Sample concept maps of the family life cycle and implications

It is very important to note that each family's life cycle can vary based on cultural, social and individual factors. While the stages discussed are general, not every family will go through all of them, and the timing and experiences within each stage can differ significantly.

Key Task

Discuss the stages of the family life cycle and their implication in family decision-making on effective growth and development.

Pedagogical Exemplars

Teacher Activity

Teachers may reinforce teaching by inviting learners to watch demonstration/video charts, slides or posters on the family life cycle to support a whole class discussion of the various stages of the family life cycle. In mixed groups, teachers assign roles to group members, learners will discuss the different stages of the family life cycle and their implications on family management. Learners may share their experiences at home as part of these discussions. Each group should produce a group presentation based on their discussions and shared experiences.

1. **Experiential/Structuring Talk for Learning Approaches**

   With the aid of videos, charts, slides or posters, learners in mixed-ability groups to use talking points or panel discussions to examine the different stages of the family life cycle and the implications they have on family management. Monitor group work to give constructive feedback and encourage learners to support each other.

2. **Group Work/Collaborative Learning Approaches**
   a. In mixed-ability groups, hold a panel discussion on the different stages of the family life cycle and their implications on family management. Each group will prepare a presentation and present it to the class.

b. Guide learners in small groups to use panel discussion/radio presentation strategies to explain the concept of family and types of family. Organise an open forum for learners to present their findings. Encourage all learners to reflect on the presentations and willingly share their views or ask questions for clarification. Teachers should ask probing questions to assess learners' understanding of the concept and provide constructive feedback on the process. For example:
   a) *List two family life cycle stages. Targeted at learners approaching proficiency.*
   b) *Explain how the expanding stage could impact on the finances of an individual. Targeted at learners who are proficient and have a clear understanding and ability to perform tasks.*
   c) *Explain how the marriage stage could impact on the emotional, financial and social state of an individual. This task is designed for those with a high level of understanding where they are encouraged to justify their responses*

Key Assessment

The teacher should focus on formative assessments by choosing from the following exemplars or creating their own formative assessment activities:

DoK Level 2: Describe at least three stages of the family life cycle

DoK Level 3: Create a graphic illustration of the various stages of the family life cycle using concept maps, charts, posters or albums.

DoK Level 4:

1. Examine the stages of your family life cycle and write a family journal entry on the history, present and future aspirations of the family.

2. Case study: Interview a family of your choice and report on the following:
   a) The stage
   b) The achievement
   c) The challenges
   d) How they are coping

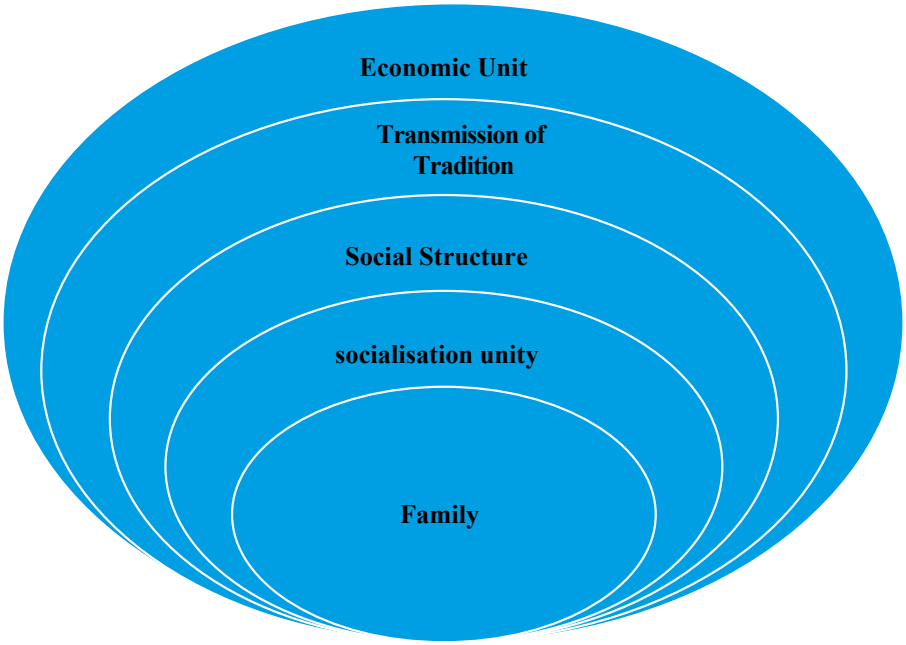
Week 19

Learning Indicators:

1. *Describe the relationships between families and society.*
2. *Discuss the contribution of the family to the society.*

Theme or Focal Area : Relationships between Families and Society

Key Concepts



Key Tasks

Description of the relationships between families and society.

Pedagogical Exemplars

Teacher Activity

Teachers may reinforce teaching by inviting learners to share their opinions of the relationship between their families and the community. In mixed groups, teachers assign roles to group members, learners will share their opinions. Each group should make a group presentation based on their discussions and shared experiences. Encourage learners to ask questions and provide feedback on each group's work.

1. **Group Work/Talk for Learning Approaches**

   Ask learners to share their opinions of the relationship between their families and the community. Encourage learners to formulate ways of working together to promote collaboration and support for all learners. Teachers should ask probing questions to assess learners' understanding of the concept and provide constructive feedback of the process. For example:

   a) *State the relationship that exists between the family and the school. Targeted at learners approaching proficiency.*

   b) *How does the family contribute to the society? Targeted at learners who are proficient and have a clear understanding and ability to perform tasks*

c) *How can the relationship between the family and school be strengthened? This task is designed for those with a high level of understanding where they are encouraged to justify their responses.*

Key Assessment

The teacher should focus on formative assessments by choosing from the following exemplars or creating their own formative assessment activities:

DoK Level 2: Describe the relationship between families and selected groups in your community.

DoK Level 4: Write a report on the relationship between your family and any of the following groups in the community for presentation and appraisal.

a) Religious groups

b) Traders

c) Schools

d) Hospitals

Theme or Focal Area: Contribution of Families to the Development of Society

Key Concepts

Families are integral to the development of society by shaping the values, behaviour and capabilities of individuals. Their contributions extend beyond the immediate family unit, positively impacting the broader community and society at large. A strong and supportive family environment fosters well-rounded and responsible citizens who actively participate in building a better and more prosperous society.

1. Socio-cultural development: Families are the primary agents of socialisation, instilling values, morals and social norms in their children. These values, in turn, shape individuals' behaviour and help create a cohesive and cooperative society.
2. Education and learning: Families play a crucial role in supporting education and fostering a love for learning. Parents often provide early education, encouragement and guidance to their children, setting the foundation for their intellectual development and future success
3. Emotional support: Families offer emotional support and nurture to their members, contributing to their mental well-being and resilience. Individuals who grow up in a supportive family environment are more likely to become emotionally stable and productive members of society.
4. Economic stability: Families form the basic economic unit in society. They contribute to the labour force, generate income, and participate in economic activities that contribute to the overall economic development of the community and nation.
5. Social cohesion: Families provide a sense of belonging and social cohesion within communities. Strong family bonds foster a sense of responsibility, care and commitment to others, contributing to a more harmonious and cooperative society.

Key Tasks

1. Discussion of the contributions of the family to society.
2. Conduct family interviews to produce real-life evidence on how families contribute to the development of society.

Pedagogical Exemplars

Teacher Activity

Organise a forum with learners and invite individuals who have achieved diverse levels of success in family life for the learners to interact with them. Encourage learners to ask questions during the interaction. Guide learners in mixed ability/gender cultural/friendship groups to organise a visit to community social welfare centres within and outside the school's community to investigate the contributions of the society to the family and identify the social interventions that are available to families. Ask learners to present a report on what they learnt from the visit orally or in written format.

Provide prompt and constructive feedback to learners.

1. **Experiential Learning/ Collaborative Learning/Project-Based Learning Approaches**

   Organise a forum and invite individuals who have achieved diverse levels of success in family life to interact with learners.

2. **Group work**

   Groups reflect together and write a report on what they learnt from the forum. Give prompt feedback on learners' reports using GESI responsive language to serve as a motivation. Teachers should ask probing questions to assess learners' understanding of the concept and provide constructive feedback of the process. For example:

   a) *State two roles of the family in the development of society. Targeted at learners approaching proficiency.*

   b) *What roles do the family play in facilitating social-cultural development? Targeted at learners who are proficient and have a clear understanding and ability to perform tasks.*

   c) *Families form the basic economic unit in society. Discuss the role that the family plays in the economic growth of society. This task is designed for those with a high level of understanding where they are encouraged to justify their responses*

Key Assessment

The teacher should focus on formative assessments by choosing from the following exemplars or creating their own formative assessment activities:

DoK Level 2: Describe at least three ways that families contribute to society.

DoK Level 3: Read sample case study scenarios related to how families contribute to society. Explain the importance of a strong family environment to maintaining good societal norms.

DoK Level 4: Organise a visit to a community social welfare centre within and outside the school community. Identify at least three social interventions that are available to families and produce a report outlining the benefits to the society. Present your report using different presentation modes.

Week 20

Learning indicator: *Examine the contribution of the society to the family*

Theme or Focal Area : Contribution of the Society to the Development of Families

Key Concepts

The society's contributions to the development of families are vital for their well-being and success. Supportive policies, access to resources, cultural values and community engagement all play crucial roles in shaping the strength and resilience of families within the broader social fabric. A collaborative effort between families and society is essential to create an environment where families can thrive and contribute positively to the overall development of society. The major aspects include:

1. Health: Access to adequate healthcare facilities and services is crucial for the physical and mental well-being of family members. Societal investment in health care positively impacts family health outcomes.
2. Culture: Societal cultural values and norms influence family dynamics and parenting practices. Cultures that prioritise family bonds and mutual support contribute to the development of strong and cohesive families.
3. Economic: A stable and thriving society with a strong economy can create opportunities for families to improve their employment, financial well-being and provide better opportunities for their children.
4. Family-friendly infrastructures: Societies that develop family-friendly infrastructures, such as parks, recreational facilities and childcare centres, enhance the quality of life for families and support their overall development.
5. Education and awareness: Societies can promote education and awareness on various family-related issues, including parenting skills, family planning and relationship counselling. Access to information and knowledge empowers families to make informed decisions and navigate challenges effectively.

Key Tasks

Organise a talk on the relationship between society and families.

Pedagogical Exemplars

Teacher Activity

Teachers should invite a resource person to present a talk on the impact that society has on families concerning various stages of the family life cycle. Learners should be allowed to ask questions. Teachers should ask probing questions to assess learners' understanding of the concept and provide constructive feedback of the process. For example:

a) *Identify three ways in which society can contribute to the well-being of families. Targeted at learners approaching proficiency.*

b) *Explain how society contributes to the mental and physical well-being of the family. Targeted at learners who are proficient and have a clear understanding and ability to perform tasks.*

c) *Explain how cultural values and norms influence the family and parenting styles. This task is designed for those with a high level of understanding where they are encouraged to justify their responses*

Key Assessment

The teacher should focus on formative assessments by choosing from the following exemplars or creating their own formative assessment activities.

DoK Level 4:

a) Investigate the contribution of society to the family in your community and present your report for peer review using different modes of presentation.

b) Organise a role-play session in your community to engage your peers and other adults to discuss the contribution of society to the development of families as well as the family's contribution to society.

Section Review

In summary, responsible family living aims to prepare learners for the complex and dynamic challenges of family life. Integrating the core national values, the Ghanaian cultural context, practical skills and ethical considerations in lesson delivery, learners will be equipped with in-depth knowledge, understanding and experiences on the relationship between families and society. They will also develop the ability to communicate effectively, respect and adapt to the changes in social dynamics and the influence on the relationship of families and society. Also, learners will develop the ability to apply the skills in carrying out various responsibilities within the family and contribute positively to the physical, emotional and social development of their communities.

Teaching/Learning Resources: From The Curriculum

- Prepared video or YouTube videos on families of different socio-cultural backgrounds and contexts.
- Sample videos, charts, posters or recorded drama, concept maps, mind maps and concept cartoons and slides on family relationships interconnections and contributions to the development of individuals, families and societies.
- Open educational resources on family cycle and their implication for management
- Flip charts or exercise books
- Resource persons (males, females and persons with disabilities) who have achieved diverse levels of success in family life.
- Relevant community social welfare centres

References

- Asare, E., & Kwafoa, M, (2017). *Understanding management in living. (3rd Ed.)*. Kwadwoan Publishing: Accra, Ghana.
- NaCCA, (2023). *Draft Senior High School/ Senior High Technical School/Science Technology Engineering and Mathetics Curriculum for Home Economics.* Unpublished.
- Ministry of Education, (2010). *Teaching Syllabus for Management in Living*. CRDD
- Leonardo Ai Image generator.

SECTION 7: SEWING SUPPLIES, ARRANGEMENT OF FULLNESS AND FASTENERS AND OPENINGS

Strand: **Clothing and Textiles**

Sub-Strand: Clothing and Textiles Production

Learning Outcome: *Apply the knowledge, skills, values and attitudes to select and produce clothing items*

Content Standard: Demonstrate knowledge, understanding and skills in clothing construction processes

INTRODUCTION AND SUMMARY SECTION

Clothing and Textiles Production Technology is the third sub-strand of the Clothing and Textiles strand and the last section of the Home Economics Teacher Manual. This section reflects the recognition of the significance of the clothing and textiles industry in Ghana. Specifically, the section focuses on; sewing supplies used in clothing production (e.g., fabrics, notions, fasteners), arrangement of fullness, demonstration on how to arrange fullness, openings and fastenings and demonstration of how to make openings and fastenings. This section involves the processes in clothing and textile production and combining traditional craftsmanship with modern technological advancements. Learners will explore their creative and innovative skills in relation to cultural significance embedded in clothing and textile production, preparing them for potential careers in the dynamic and diverse field of clothing and textiles.

SUMMARY OF PEDAGOGICAL EXEMPLARS

The teacher should not be limited to the pedagogical exemplars stated here. He/she is encouraged to use varied pedagogical strategies relevant to the lesson to make it more learner-focused. Typically, he/she could adopt the use of group work (considering mixed-ability, mixed-gender and friendship groupings), structured talk for learning and problem-based learning approaches, which consider the use of samples, charts, videos and posters on textile production technology. The learner is required to understand the significance of the Clothing and Textiles industry in Ghana. The minimum competencies required of a learner in this section include; sewing supplies used in clothing production (e.g., fabrics, notions and fasteners), arrangement of fullness, demonstration on how to arrange fullness, openings and fastenings and demonstration of how to make openings and fastenings. The adoption of experiential learning approaches, where students are assigned to do projects and present their findings in class, could also be considered. Last but not the least, the teacher should incorporate GESI, SEN, SEL, the 21st Century skills, core national values and ICT in the lesson delivery to make the lesson learner-centred.

ASSESSMENT SUMMARY

The teacher should use varied assessment strategies to assess learners' levels of Depth of Knowledge (DoK). The assessment should cater for learners Approaching Proficiency (AP), those at Proficiency (P) and those who are Highly Proficient (HP) in the assessment process as outlined in the Home Economics Teacher Manual and Senior High School/Senior High Technical School Science Technology Engineering and Mathematics (SHS/SHTS/STEM) Curriculum. It is equally noteworthy to align the assessment activities with the learning indicators, as well as the pedagogical exemplars,

to create a link between the learning indicators, the pedagogical exemplars and the assessment strategies. As a guide, specific examples of the assessment tasks have been outlined in this section to assist the teacher.

Week 21

Learning Indicators:

1. *Discuss sewing supplies.*
2. *Arrangement of fullness in garment construction.*

Theme or Focal Area : Sewing Supplies

Key Concepts

Sewing supplies are essential tools and materials used in the art of sewing, whether for clothing, home decor or crafts. The sewing supplies to be discussed include fabrics, notions and fasteners.

Fasteners

Key Tasks

1. Discuss sewing supplies.
2. Surf the internet and other sources for information on sewing supplies and their functions in clothing production.

Pedagogical Exemplars

Teacher Activity

Engage learners in groups to brainstorm and describe sewing supplies. Organise a visit to a Clothing and Textile industry or workshop for learners to observe different types of sewing supplies and how fullness is arranged in garment construction. Encourage learners individually or in groups to surf the internet/posters/videos/pictures to find out forms of sewing supplies. Engage learners in groups to reflect on what they observed during the visit and present their observations to the class. Provide constructive feedback and support to learners during and after the exercise.

1. **Talk for Learning/Collaborative Learning Approaches**

   Learners brainstorm to describe sewing supplies. Additionally, learners visit a sewing workshop within their community to observe different types of sewing supplies and how fullness is arranged in garment construction.

2. **Experiential Learning/ Group Work**

   Learners in mixed ability/gender/random groups discuss the various sewing supplies used in the sewing industry based on their observations. Groups present their report for whole class discussion using different presentation modes. Teachers should ask probing questions to assess learners' understanding of the concept and provide constructive feedback of the process. For example:

   a) *List three sewing supplies used in sewing. Targeted at learners approaching proficiency.*
   b) *State three sewing supplies and explain how they are used in making fullness in garment construction. Targeted at learners who are proficient and have a clear understanding and ability to perform tasks.*
   c) *Describe the functions of fasteners and notions in clothing production. This task is designed for those with a high level of understanding where they are encouraged to justify their responses.*

Key Assessment

The teacher should focus on formative assessments by choosing from the following exemplars or creating their own formative assessment activities.

DoK level 2:

a) Describe at least three types of sewing supplies and present your report orally or in written format.

b) Use concept maps to describe sewing supplies, and indicate their use. Paste your work for the gallery walk and appraisal.

DoK Level 3: Project: Prepare an album of any one of the following sewing supplies:

a) Notions

b) Fasteners

c) Fabrics

Theme or Focal Area : Arrangement of Fullness in Garment Construction

Key Concepts

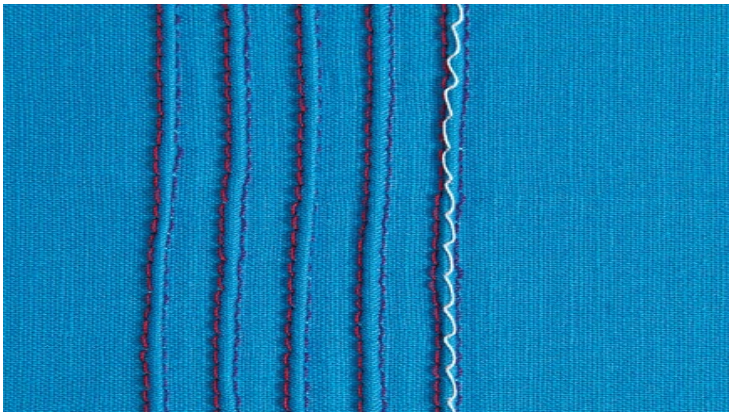
Arrangement of fullness: One process which is of greatest importance in clothing construction is the arrangement of fullness. Interesting designs can be achieved if the designer chooses appropriate methods of arranging fullness and is competent in performing the task involved in the arrangement process. The methods of arranging fullness include gathering, smocking, pleating, shirring, darts, casing, frills and tucks.

a) **Pleats**: It is a fold of fabric designed to give extra width to garments.

b) **Darts**: It is a stitch fold of fabric, which tapers to a narrow point. Common positions of darts on a garment are the waist of a bodice and skirt, the underarm, the shoulder, the back neckline, the elbow and the sleeve head.

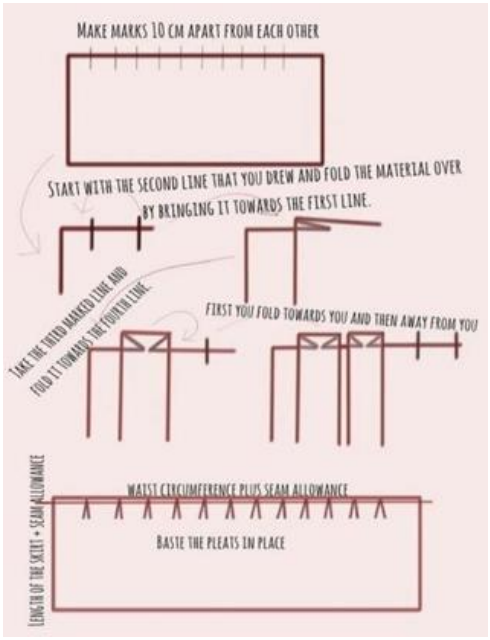
c) Gathers: Gathering is the process of drawing a given amount of fabric into a predetermined smaller area, along one or several stitching lines to create soft, even folds.

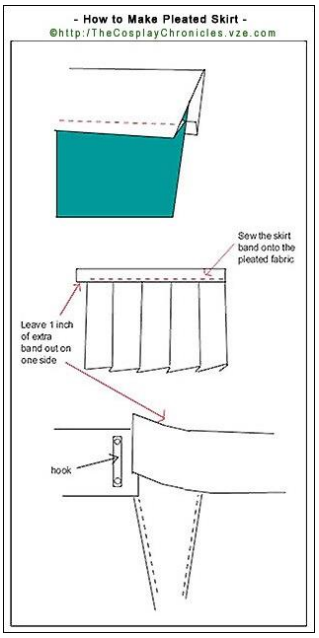
d) Tucks: It is a fold or pleat in a fabric that is sewn or fastened in place. Tucks are used to decorate clothing or household linens.



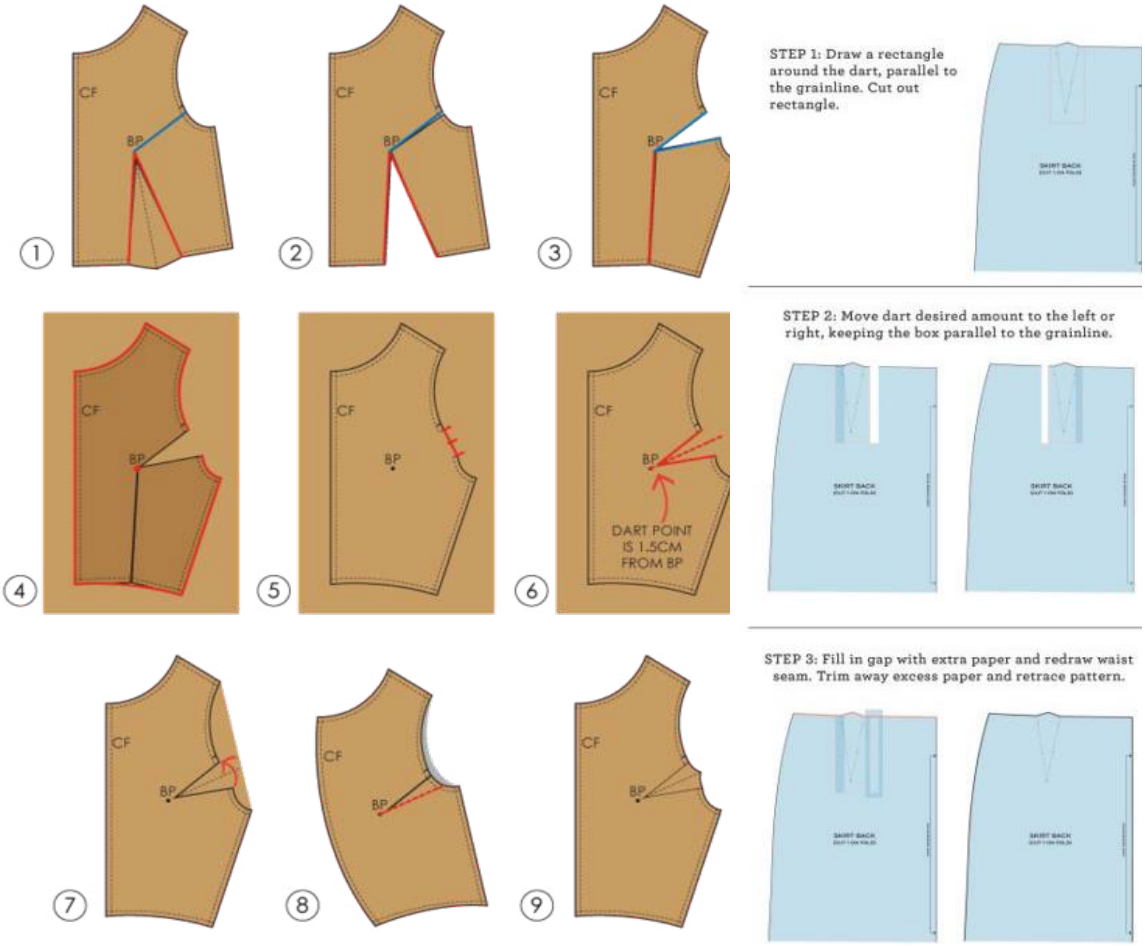
Steps for making the following arrangement of fullness: Pleats, Darts

a) Pleats





b) Darts



Source: *Pinterest.com*

Pedagogical Exemplars

Teacher Activity

Engage learners to brainstorm and reflect on their understanding of the arrangement of fullness in clothing construction. Teachers should ensure that they demonstrate/show a video on how to make at least three samples of fullness as used in clothing construction for learners to observe. Encourage learners individually or in groups to surf the internet and other sources for information on the steps involved in arranging fullness used in clothing construction. Engage learners in groups to reflect on what they observed and discuss them. Provide constructive feedback and support to learners during and after the exercise.

Experiential Learning/Group Work Approaches:

Learners in mixed-gender groups discuss at least three types of arrangement of fullness they observed. Learners present their reports using different modes. Learners complete the demonstration to make samples of fullness used in clothing construction. Learners exhibit samples of work for appraisal by both teachers and peers. Teachers should ask probing questions to assess learners' understanding of the concept and provide constructive feedback of the process. For example:

a) *Identify three methods of arranging fullness.*

b) *Explain how sewing supplies are used in making fullness in garment construction. Targeted at learners who are proficient and have a clear understanding and ability to perform tasks.*

c) *Describe the observed steps in making fullness in garment construction. This task is designed for those with a high level of understanding where they are encouraged to justify their responses.*

Talk for Learning Approaches:

Learners brainstorm to reflect on their understanding of the arrangement of fullness in clothing construction i.e., meaning and types.

Key Assessment Strategies

The teacher should focus on formative assessments by choosing from the following exemplars or creating their own formative assessment activities.

DoK Level 3:

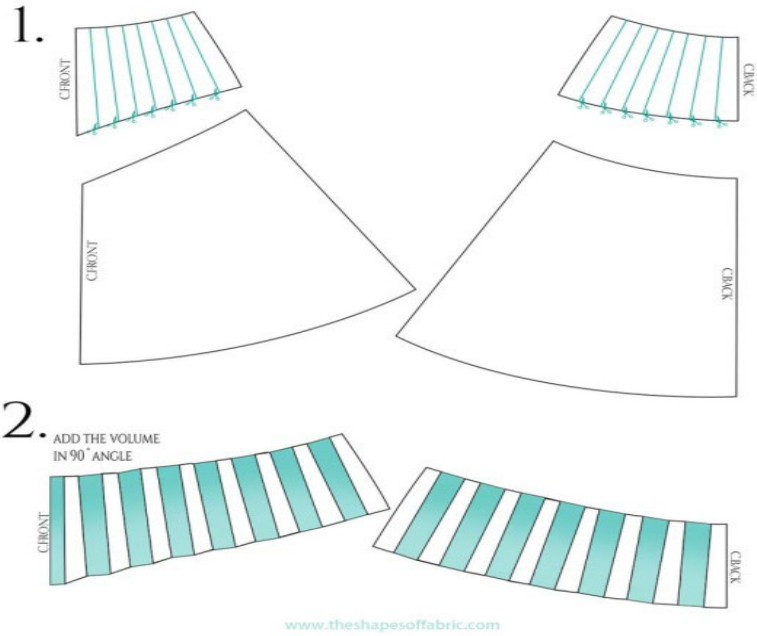
1. Design a specimen album of sample work of pleats, darts, gathers and tucks.
2. Display the specimen album of sample work on the arrangement of fullness for appraisal.

Week 22

Learning Indicator: *Demonstrate how to make arrangements of fullness*

Theme or Focal Area : Practical Activities on arrangement of fullness

a) Gathers



Source: *The shape of fabric.com*

b) Tucks

Source: *The shape of fabric.com*

Pedagogical Exemplars

Teacher Activity

Teachers should ensure that they demonstrate/show a video on how to make arrangements of fullness in clothing construction for learners to observe. Encourage learners individually or in groups to

surf the internet/posters/videos/pictures to find out how fullness is arranged on garments. Organise and visit a clothing and textile industry or sewing workshop within your community for learners to observe how fullness is arranged in garment construction. Engage learners in groups to reflect on what they observed and discuss them. Provide constructive feedback and support to learners during and after the exercise.

Experiential Learning/Structuring Talk for Learning:

Ask learners to observe how to make fullness on garments. Learners reflect on their observations and demonstrate to the class how to make fullness on a garment. Learners should make samples of arrangement of fullness and they should exhibit samples of work for appraisal by both teachers and peers. Learners should be honest in appraising their peer's work/product.

Key Assessment Strategies

The teacher should focus on formative assessments by choosing from the following exemplars or creating their own formative assessment activities.

DoK Level 4: Make samples of the following fullness used in clothing construction and exhibit samples of work for appraisal by both teachers and peers:

- Gathers (gathering)
- Tucks

Week 23

Learning Indicators: *Discuss openings and fastenings*

Theme or Focal Area : Discuss Openings and Fastenings

1. Openings and Fastenings

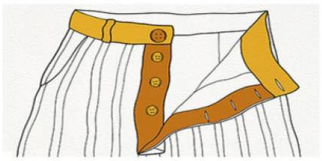
a. **Openings:** They are sections that allow sewn articles to slip on and off easily and fit at the same time. Examples are as follows:

CONTINOUS WRAP

FACED-SLIT

BOX PLEAT

FLY FRONT



HEM

BOUND

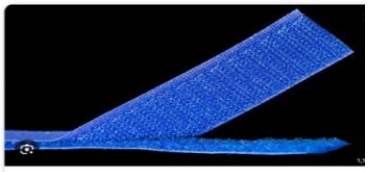
b. **Fastenings:** These are devices used to close openings. When an opening has been completed and pressed, it is ready to have the fastenings attached.

BUTTONS

PRESS STUDS

ZIPPER

VELCRO



c. Matching openings and their fasteners/closures:
- Fly front opening: Button and buttonhole.
- Bound opening: Press stud, hook and eye/bar.

Key Task

Surf the internet and other sources for information on openings and fastenings.

Pedagogical Exemplars

Teacher Activity

Engage learners in pairs to discuss the types of openings and fastening that can be used to close openings. Teachers should ensure that they demonstrate/show a video on the types of opening and fastening used in clothing construction for learners to observe. Encourage learners individually or in groups to surf the internet/posters/videos/pictures to find out other types of openings and fastening used in clothing construction. Engage learners in groups to reflect on what they observed and discuss them. Provide constructive feedback and support to learners during and after the exercise.

Talk for Learning/Collaborative Learning Approaches:

Ask learners in pairs/groups to discuss the types of openings/fastenings and the examples of fasteners/closures that can be used to close openings.

Group Work/Collaborative Learning Approaches

Guide learners in a discussion of factors that influence the choice of openings and fastenings.

E.g., type of fabric, age of the wearer and style of the garment

Key Assessment Strategies

The teacher should focus on formative assessments by choosing from the following exemplars or creating their own formative assessment activities.

DoK Level 3:

In groups, discuss the advantages and disadvantages of openings and fastenings that could be used for the following:

- School uniforms
- Babies wear
- Male and female garments

Week 24

Learning Indicators: *Demonstrate how to make openings and fastenings.*

Theme or Focal Area : Demonstrate how to make openings and fastenings

Key Concept

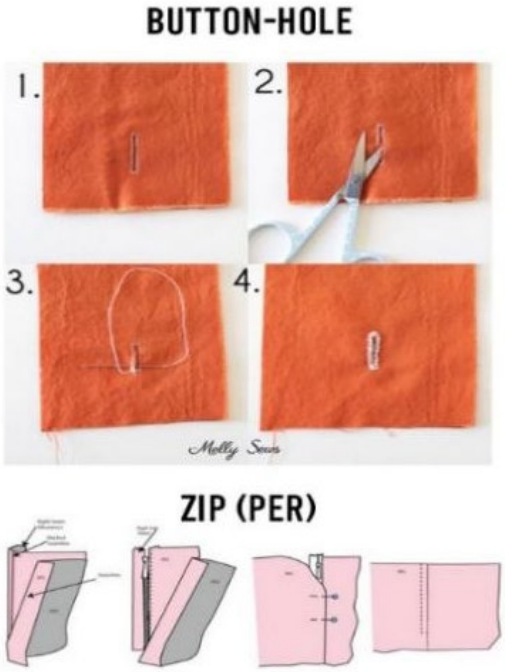
1. **Steps and processes in making openings**:
   a. Press Studs
      Step 1: Separate and mark. Separate the halves of the snap and grab the ball side first.
      Step 2: Sew through holes. Thread your needle through one of the holes at the edge of the snap.
      Step 3: Next holes….
      Step 4: Repeat

   b. Velcro
      Step 1: Thread the needle and knot the ends of the thread together
      Step 2: Push the needle through the back of the Velcro to anchor the knot.
      Step 3: Sew around the Velcro using a straight stitch
      Step 4: Tie the thread off when you are back to where you started
      Step 5: Cut the thread as close to the knot as possible.

   c. Button and buttonhole
      Step 1: Stabilize your fabric where the buttonhole will be stitched
      Step 2: Mark your buttonhole on your fabric with a ruler and fabric pen, making it larger than your button.
      Step 3: Attach the buttonhole foot to your machine
      Step 4: On your machine, set the stitch selector to buttonhole step 1
      Step 5: Start sewing.

   d. Zipper opening
      Step 1: Finish and sew the fabric's edges
      Step 2: Baste the zipper opening, and press the seam allowance
      Step 3: Place the zipper
      Step 4: Pin the zipper
      Step 5: Stitch the zipper

Step 6: Rip out the basting stitches
Step 7: final thoughts.



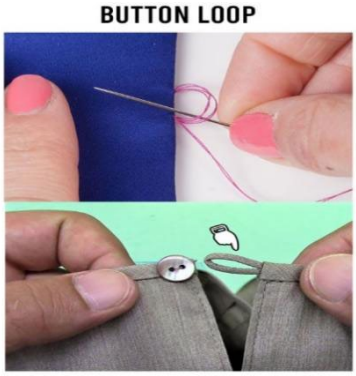
Source: *Melly Sews*

2. Hook and Eye

3. Hook and Bar

Source: www.craftsy.com

4. **Button Loop**



Source: *madamsew.com*

5. **Points to consider when making openings:**

   The key points to consider when making openings are as follows:

   a. The position of the article
   b. Age of the wearer
   c. Style of the article
   d. The fabric

Pedagogical Exemplars

Teacher Activity

Teachers should ensure that they demonstrate/show a video on how to make arrangements of fullness in clothing construction for learners to observe. Encourage learners individually or in groups to surf the internet/posters/videos/pictures to find out how openings and fastenings are made using hook and line and buttons. Organise and visit a clothing and textile industry or sewing workshop within your community for learners to observe how openings and fastenings are made on garments. Engage learners in groups to reflect on what they observed and discuss them. Provide constructive feedback and support to learners during and after the exercise.

Group Work/Project-Based Approaches:

Ask learners to watch a video or a demonstration on how to make openings and fix fasteners on garments. Learners reflect on their observations and make a sample of openings and fastenings on a garment.

Key Assessment Strategies

The teacher should focus on formative assessments by choosing from the following exemplars or creating their own formative assessment activities.

DoK Level 3:

1. Select and make some openings and fastenings for specific garments and occasions e.g., dress for a child. Explain why you have selected those specific openings and fastenings.
2. Project: Create a photo album of at least three openings and fastenings.
3. Create openings and fastenings to enhance clothing production and utilisation.

DoK Level 4:

Fix the following fasteners on your samples and present them for peer review and appraisal:

a) Hook and Eye

b) Hook and Bar

c) Button Loop

Section Review

In summary, the Clothing and Textile Production Technology aims to provide learners with a holistic understanding of the dynamic field of clothing and textiles. The integration of traditional craftsmanship with modern technologies and emphasizing sustainability, learners will be prepared to contribute to and thrive in the evolving industry of clothing and textiles production.

Teaching/Learning Resources: From the Curriculum

- Videos on sewing supplies, arrangement of fullness, opening and fasteners
- Computers, Projectors and Smartphones (if possible)
- Fabrics, Fasteners, thread, Pins, Needle, Tailors chalk
- Flip charts, Pictures, Realia of clothing and notions
- Sewing tools: Pins, Needle, Tailors chalk A pair of scissors Thimble Seam ripper Tape measure
- Flip charts/Pictures /Realia of clothing. Specimen Album of openings, fasteners and arrangement of fullness
- Samples of openings and fastenings
- Specimen Album

References

- NaCCA, (2023). *Draft Senior High School/ Senior High Technical School/Science Technology Engineering and Mathematics Curriculum for Home Economics.* Unpublished.
- Ministry of Education, (2010). *Teaching Syllabus for Clothing and Textiles*. CRDD
- Forster, P. (2014). *Clothing and textile*. Winmat Publishers Limited: Accra.
- Leonardo Ai Image generator

ACKNOWLEDGEMENTS

Special thanks to Professor Edward Appiah, Director-General of the National Council for Curriculum and Assessment (NaCCA) and all who contributed to the successful writing of the Teacher Manuals for the new Senior High School (SHS), Senior High Technical School (SHTS) and Science Technology, Engineering and Mathematics (STEM) curriculum.

The writing team was made up of the following members:

NaCCA Team	
Name of Staff	**Designation**
Matthew Owusu	Deputy Director-General, Technical Services
Reginald Quartey	Ag. Director, Curriculum Development Directorate
Anita Cordei Collison	Ag. Director, Standards, Assessment and Quality Assurance Directorate
Rebecca Abu Gariba	Ag. Director, Corporate Affairs
Anthony Sarpong	Director, Standards, Assessment and Quality Assurance Directorate
Uriah Kofi Otoo	Senior Curriculum Development Officer (Art and Design Foundation & Studio)
Nii Boye Tagoe	Senior Curriculum Development Officer (History)
Juliet Owusu-Ansah	Senior Curriculum Development Officer (Social Studies)
Eric Amoah	Senior Curriculum Development Officer (General Science)
Ayuuba Sullivan Akudago	Senior Curriculum Development Officer (Physical Education & Health)
Godfred Asiedu Mireku	Senior Curriculum Development Officer (Mathematics)
Samuel Owusu Ansah	Senior Curriculum Development Officer (Mathematics)
Thomas Kumah Osei	Senior Curriculum Development Officer (English)
Godwin Mawunyo Kofi Senanu	Assistant Curriculum Development Officer (Economics)
Joachim Kwame Honu	Principal Standards, Assessment and Quality Assurance Officer
Jephtar Adu Mensah	Senior Standards, Assessment and Quality Assurance Officer
Richard Teye	Senior Standards, Assessment and Quality Assurance Officer
Nancy Asieduwaa Gyapong	Assistant Standards, Assessment and Quality Assurance Officer
Francis Agbalenyo	Senior Research, Planning, Monitoring and Evaluation Officer
Abigail Birago Owusu	Senior Research, Planning, Monitoring and Evaluation Officer
Ebenezer Nkuah Ankamah	Senior Research, Planning, Monitoring and Evaluation Officer
Joseph Barwuah	Senior Instructional Resource Officer
Sharon Antwi-Baah	Assistant Instructional Resource Officer
Dennis Adjasi	Instructional Resource Officer

NaCCA Team	
Name of Staff	**Designation**
Samuel Amankwa Ogyampo	Corporate Affairs Officer
Seth Nii Nartey	Corporate Affairs Officer
Alice Abbew Donkor	National Service Person

Subject	Writer	Designation/Institution
Home Economics	Grace Annagmeng Mwini	Tumu College of Education
	Imoro Miftaw	Gambaga Girls' SHS
	Jusinta Kwakyewaa (Rev. Sr.)	St. Francis SHTS
Religious Studies	Dr. Richardson Addai-Mununkum	University of Education Winneba
	Dr. Francis Opoku	Valley View University College
	Aransa Bawa Abdul Razak	Uthmaniya SHS
	Godfred Bonsu	Prempeh College
RME	Anthony Mensah	Abetifi College of Education
	Joseph Bless Darkwa	Volo Community SHS
	Clement Nsorwineh Atigah	Tamale SHS
Arabic	Dr. Murtada Mahmoud Muaz	AAMUSTED
	Dr. Abas Umar Mohammed	University of Ghana
	Mahey Ibrahim Mohammed	Tijjaniya Senior High School
French	Osmanu Ibrahim	Mount Mary College of Education
	Mawufemor Kwame Agorgli	Akim Asafo SHS
Performing Arts	Dr. Latipher Osei Appiah-Agyei	University of Education Winneba
	Desmond Ali Gasanga	Ghana Education Service
	Chris Ampomah Mensah	Bolgatanga SHS, Winkogo
Art and Design Studio and Foundation	Dr. Ebenezer Acquah	University for Education Winneba
	Seyram Kojo Adipah	Ghana Education Service
	Dr. Jectey Nyarko Mantey	Kwame Nkrumah University of Science and Technology
	Yaw Boateng Ampadu	Prempeh College
	Kwame Opoku Bonsu	Kwame Nkrumah University of Science and Technology
	Dzorka Etonam Justice	Kpando Senior High Sschool

Subject	Writer	Designation/Institution
Applied Technology	Dr. Sherry Kwabla Amedorme	AAMUSTED
	Dr. Prosper Mensah	AAMUSTED
	Esther Pokuah	Mampong Technical College of Education
	Wisdom Dzidzienyo Adzraku	AAMUSTED
	Kunkyuuri Philip	Kumasi SHTS
	Antwi Samuel	Kibi Senior High School
	Josiah Bawagigah Kandwe	Walewale Technical Institute
	Emmanuel Korletey	Benso Senior High Technical School
	Isaac Buckman	Armed Forces Senior High Technical School
	Tetteh Moses	Dagbon State Senior High School
	Awane Adongo Martin	Dabokpa Technical Institute
Design and Communication Technology	Gabriel Boafo	Kwabeng Anglican SHTS
	Henry Agmor Mensah	KASS
	Joseph Asomani	AAMUSTED
	Kwame Opoku Bonsu	Kwame Nkrumah University of Science and Technology
	Dr. Jectey Nyarko Mantey	Kwame Nkrumah University of Science and Technology
	Dr. Ebenezer Acquah	University for Education Winneba
Business Studies	Emmanuel Kodwo Arthur	ICAG
	Dr. Emmanuel Caesar Ayamba	Bolgatanga Technical University
	Ansbert Baba Avole	Bolgatanga Senior High School, Winkogo
	Faustina Graham	Ghana Education Service, HQ
	Nimako Victoria	SDA Senior High School, Akyem Sekyere
Agriculture	Dr. Esther Fobi Donkoh	University of Energy and Natural Resources
	Prof. Frederick Adzitey	University for Development Studies
	Eric Morgan Asante	St. Peter's Senior High School
Agricultural Science	David Esela Zigah	Achimota School
	Prof. J.V.K. Afun	Kwame Nkrumah University of Science and Technology
	Mrs. Benedicta Carbiliba Foli	Retired, Koforidua Senior High Technical School
Government	Josephine Akosua Gbagbo	Ngleshie Amanfro SHS
	Augustine Arko Blay	University of Education Winneba
	Samuel Kofi Adu	Fettehman Senior High School

Subject	Writer	Designation/Institution
Economics	Dr. Peter Anti Partey	University of Cape Coast
	Charlotte Kpogli	Ho Technical University
	Benjamin Agyekum	Mangoase Senior High School
Geography	Raymond Nsiah Asare	Methodist Girls' High School
	Prof. Ebenezer Owusu Sekyere	University for Development Studies
	Samuel Sakyi Addo	Achimota School
History	Kofi Adjei Akrasi	Opoku Ware School
	Dr. Anitha Oforiwah Adu-Boahen	University of Education Winneba
	Prince Essiaw	Enchi College of Education
Ghanaian Language	David Sarpei Nunoo	University of Education Winneba, Ajumako
	Catherine Ekua Mensah	University of Cape Coast
	Ebenezer Agyemang	Opoku Ware School
Physical Education and Health	Paul Dadzie	Accra Academy
	Sekor Gaveh	Kwabeng Anglican Senior High Technical School
	Anthonia Afosah Kwaaso	Junkwa Senior High School
	Mary Aku Ogum	University of Cape Coast
Social Studies	Mohammed Adam	University of Education Winneba
	Simon Tengan	Wa Senior High Technical School
	Jemima Ayensu	Holy Child School
Computing and Information Communication Technology (ICT)	Victor King Anyanful	OLA College of Education
	Raphael Dordoe Senyo	Ziavi Senior High Technical School
	Kwasi Abankwa Anokye	Ghana Education Service, SEU
	Millicent Heduvor	STEM Senior High School, Awaso
	Dr. Ephriam Kwaa Aidoo	University for Education Winneba
	Dr. Gaddafi Abdul-Salaam	Kwame Nkrumah University of Science and Technology
English Language	Esther O. Armah	Mangoase Senior High School
	Kukua Andoh Robertson	Achimota School
	Alfred Quaittoo	Kaneshie Senior High Technical School
	Benjamin Orrison Akrono	Islamic Girls' Senior High School
	Fuseini Hamza	Tamale Girls' Senior High School
Intervention English	Roberta Emma Amos-Abanyie	Ingit Education Consult
	Perfect Quarshie	Mawuko Girls Senior High School
	Sampson Dedey Baidoo	Benso Senior High Technical School

Subject	Writer	Designation/Institution
Literature-in-English	Blessington Dzah	Ziavi Senior High Technical School
	Angela Aninakwah	West African Senior High School
	Juliana Akomea	Mangoase Senior High School
General Science	Dr. Comfort Korkor Sam	University for Development Studies
	Saddik Mohammed	Ghana Education Service
	Robert Arhin	SDA SHS, Akyem Sekyere
Chemistry	Ambrose Ayikue	St. Francis College of Education
	Awumbire Patrick Nsobila	Bolgatanga SHS, Winkogo
	Bismark Tunu	Opoku Ware School
	Gbeddy Nereus Anthony	Ghanata Senior High School
Physics	Dr. Linus Labik	Kwame Nkrumah University of Science and Technology
	Henry Benyah	Wesley Girls High School
	Sylvester Affram	Kwabeng Anglican SHS
Biology	Paul Beeton Damoah	Prempeh College
	Maxwell Bunu	Ada College of Education
	Ebenezer Delali Kpelly	Wesley Girls' SHS
	Doris Osei-Antwi	Ghana National College
Mathematics	Edward Dadson Mills	University of Education Winneba
	Zacharia Abubakari Sadiq	Tamale College of Education
	Collins Kofi Annan	Mando SHS
Additional Mathematics	Dr. Nana Akosua Owusu-Ansah	University of Education Winneba
	Gershon Mantey	University of Education Winneba
	Innocent Duncan	KNUST SHS
Intervention Mathematics	Florence Yeboah	Assin Manso SHS
	Mawufemor Adukpo	Ghanata SHS
	Jemima Saah	Winneba SHS
Robotics	Dr. Eliel Keelson	Kwame Nkrumah University of Science and Technology
	Dr. Nii Longdon Sowah	University of Ghana
	Isaac Nzoley	Wesley Girls High School
Engineering	Daniel K. Agbogbo	Kwabeng Anglican SHTS
	Prof. Abdul-Rahman Ahmed	Kwame Nkrumah University of Science and Technology
	Valentina Osei-Himah	Atebubu College of Education

Subject	Writer	Designation/Institution
Aviation and Aerospace Engineering	Opoku Joel Mintah	Altair Unmanned Technologies
	Sam Ferdinand	Afua Kobi Ampem Girls' SHS
Biomedical Science	Dr. Dorothy Yakoba Agyapong	Kwame Nkrumah University of Science and Technology
	Jennifer Fafa Adzraku	Université Libre de Bruxelles
	Dr. Eric Worlawoe Gaba	Br. Tarcisius Prosthetics and Orthotics Training College
Manufacturing Engineering	Benjamin Atribawuni Asaaga	Kwame Nkrumah University of Science and Technology
	Dr. Samuel Boahene	Kwame Nkrumah University of Science and Technology
	Prof Charles Oppon	Cape Coast Technical University
Spanish	Setor Donne Novieto	University of Ghana
	Franklina Kabio Danlebo	University of Ghana
	Mishael Annoh Acheampong	University of Media, Art and Communication
Assessment	Benjamin Sundeme	St. Ambrose College of Education
	Dr. Isaac Amoako	Atebubu College of Education
Curriculum Writing Guide Technical Team	Paul Michael Cudjoe	Prempeh College
	Evans Odei	Achimota School