FOOD AND NUTRITION

CURRICULUM FOR SECONDARY EDUCATION (SHS 1 - 3)

NaCCA
NATIONAL COUNCIL FOR CURRICULUM & ASSESSMENT OF MINISTRY OF EDUCATION

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FOREWORD

Through the National Council for Curriculum and Assessment (NaCCA), Ghana's Ministry of Education has introduced a series of curriculum reforms to improve the quality and relevance of learning experiences in pre-tertiary schools in the country. These reforms will improve learning through the introduction of innovative pedagogies that encourage critical thinking and problem-solving. For a long time, our learners memorise facts and figures, which does not develop their analytical and practical skills. The Ministry recognises that learners need to be equipped with the right tools, knowledge, skills and competencies to deal with the fast-changing environment and the challenges facing their communities, the nation and the world.

These curriculum reforms were derived from the Education Strategic Plan (ESP 2018-2030), the National Pre-tertiary Education Curriculum Framework (NPTECF) and the National Pre-Tertiary Learning Assessment Framework (NPLAF), which were all approved by Cabinet in 2018. The new standards-based curriculum implemented in 2019 in basic schools, aims to equip learners to apply their knowledge innovatively to solve everyday problems. It also prioritises assessing learners' knowledge, skills, attitudes, and values, emphasising their achievements. The content of the basic school standards-based curriculum was therefore designed to promote a curriculum tailored to the diverse educational needs of the country's youth. It addresses the current curriculum's deficiencies in learning and assessment, especially in literacy and numeracy. These reforms have been carried out in phases. The curriculum for the basic school level – KG, Primary and Junior High School (JHS) – was developed and implemented from 2019 to 2021.

The curriculum for Senior High School (SHS), Senior High Technical School (SHTS) and Science, Technical, Engineering and Mathematics (STEM), which constitutes the next phase, is designed to ensure the continuation of learning experiences from JHS. It introduces flexible pathways for progression to facilitate the choice of subjects necessary for further study, the world of work and adult life. The new SHS, SHTS and STEM curriculum emphasises the acquisition of 21st Century skills and competencies, character development and instilling of national values. Social and Emotional Learning (SEL), Information Communications Technology, Gender Equality and Social Inclusion, have all been integrated into the curriculum. Assessment – formative and summative has been incorporated into the curriculum and aligned with the learning outcomes throughout the three-year programme.

The Ministry of Education's reform aims to ensure that graduates of our secondary schools can successfully compete in international high school competitions and, at the same time, be equipped with the necessary employable skills and work ethos to succeed in life. The Ministry of Education, therefore, sees the Senior High School (SHS) curriculum as occupying a critical place in the education system – providing improved educational opportunities and outcomes for further studies, the world of work and adult life – and is consequently prioritising its implementation.

ACKNOWLEDGEMENTS

This standards-based SHS curriculum was created using the National Pre-Tertiary Learning Assessment Framework (NPLAF), the Secondary Education Assessment Guide (SEAG), and the Teacher and Learner Resource Packs which include Professional Learning Community (PLC) Materials and Subject Manuals for teachers and learners. All the above-mentioned documents were developed by the National Council for Curriculum and Assessment (NaCCA). The Ministry of Education (MoE) provided oversight and strategic direction for the development of the curriculum with NaCCA receiving support from multiple agencies of the MoE and other relevant stakeholders. NaCCA would like to extend its sincere gratitude, on behalf of the MoE, to all its partners who participated in the professional conversations and discussions during the development of this SHS curriculum.

In particular, NaCCA would also like to extend its appreciation to the leadership of the Ghana Education Service (GES), the National School Inspectorate Authority (NaSIA), the National Teaching Council (NTC), the Commission for Technical and Vocational Education and Training (Commission for TVET), West African Examinations Council (WAEC) and other agencies of the MoE that supported the entire process. In addition, NaCCA acknowledges and values the contributions made by personnel from various universities, colleges of education Industry players, Vice Chancellors Ghana, Vice Chancellors Technical Universities as well as educators and learners working within the Ghana education landscape.

Special appreciation is extended to consultants who contributed to development of the curriculum. The development process involved multiple engagements between national stakeholders and various groups with interests in the curriculum. These groups include the teacher unions, the Association of Ghana Industries, and heads of secondary schools.

CONTENTS

THE SHS CURRICULUM OVERVIEW

The vision for this curriculum is to ensure the nation has a secondary education system that enables all Ghanaian children to acquire the 21st Century skills, competencies, knowledge, values and attitudes required to be responsible citizens, ready for the world of work, further studies and adult life. The nation's core values drive the SHS curriculum, and it is intended to achieve Sustainable Development Goal 4: 'Inclusive, equitable quality education and life-long learning for all'. Above all, it is a curriculum enabling its graduates to contribute to the ongoing growth and development of the nation's economy and well-being.

The curriculum is inclusive, flexible, and robust. It was written under the auspices of the National Council for Curriculum and Assessment by a team of expert curriculum writers across Ghana. It reflects the needs of critical stakeholders, including industry, tertiary education, the West African Examination Council, SHS learners, teachers, and school leaders. It has been written based on the National Pre-Tertiary Learning and Assessment Framework and the Secondary Education Policy.

The key features of the curriculum include:

- flexible learning pathways at all levels, including for gifted and talented learners and those with deficiencies in numeracy and literacy, to ensure it can meet the needs of learners from diverse backgrounds and with different interests and abilities.
- the five core learning areas for secondary education: science and technology, language arts, humanities, technical and vocational and business; with emphasis placed on STEM and agriculture as integral to each subject.
- a structured, standards-based approach that supports the acquisition of knowledge, skills and competencies, and transition and seamless progress throughout secondary education, from JHS to SHS and through the three years of SHS.
- a focus on interactive approaches to teaching and assessment to ensure learning goes beyond recall enabling learners to acquire the ability to understand, apply, analyse and create.
- guidance on pedagogy, coupled with exemplars, demonstrating how to integrate cross-cutting themes such as 21st Century skills, core competencies, the use of ICT, literacy and mathematics, Social Emotional Learning, Gender Equality and Social Inclusion as tools for learning and skills for life. Shared Ghanaian values are also embedded in the curriculum.

The curriculum writing process was rigorous and involved developing and using a Curriculum Writing Guide which provided systematic instructions for writers. The process was quality assured at three levels: through (a) evaluation by national experts, (b) trialling curriculum materials in schools and (c) through an external evaluation by a team of national and international experts. Evidence and insights from these activities helped hone the draft's final version. The outcome is a curriculum coherently aligned with national priorities, policies and the needs of stakeholders. A curriculum tailored to the Ghanaian context ensures that all learners benefit from their schooling and develop their full potential.

The following section highlights the details of the front matter of the draft curriculum. The vision, philosophy and goal of the curriculum are presented. This is followed by the details of the 21st Century skills and competencies, teaching and learning approaches, instructional design and assessment strategies. The template for the curriculum frame, which outlines the scope and sequence, the design that links the learning outcomes to particular 21st Century skills and competencies, as well as Gender Equality and Social Inclusion, Social and Emotional Learning and Ghanaian values are presented together with the structure of the lesson frame showing the links between the content standards, learning indicators with their corresponding pedagogical exemplars and assessment strategies.

INTRODUCTION

Effective implementation of this Senior High School (SHS) curriculum is the key to creating a well-educated and well-balanced workforce that is ready to contribute to Ghana's progress by harnessing the potential of the growing youth population, considering the demographic transition the country is currently experiencing (Educational Strategic Plan [ESP] 2018-2030). SHS curriculum aims to expand equitable, inclusive access to relevant education for all young people, including those in disadvantaged and underserved communities, those with special educational needs and those who are gifted and talented. Senior High School allows young people to develop further skills and competencies and progress in learning achievement, building from the foundation laid in Junior High School. This curriculum intends to meet the learning needs of all high school learners by acquiring 21st Century skills and competencies to prepare them for further studies, the world of work and adult life. Changing global economic, social and technological context requires life-long learning, unlearning, and continuous processes of reflection, anticipation and action.

Philosophy of Senior High School Curriculum

The philosophy underpinning the SHS curriculum is that every learner can develop their potential to the fullest if the right environment is created and skilled teachers effectively support them to benefit from the subjects offered at SHS. Every learner needs to be equipped with skills and competencies of interest to further their education, live a responsible adult life or proceed to the world of work.

Vision of Senior High School Curriculum

The vision of the curriculum is to prepare SHS graduates equipped with relevant skills and competencies to progress and succeed in further studies, the world of work and adult life. It aims to equip all learners with the 21st Century skills and competencies required to be responsible citizens and lifelong learners. When young people are prepared to become effective, engaging, and responsible citizens, they will contribute to the ongoing growth and development of the nation's economy and well-being.

Goal of Senior High School Curriculum

The goal of the curriculum is to achieve relevant and quality SHS through the integration of 21st Century skills and competencies as set out in the Secondary Education Policy. The key features to integrate into the curriculum are:

- Foundational Knowledge: literacy, numeracy, scientific literacy, information, communication and digital literacies, 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, integrity, self-directed learning, self-confidence, adaptability and resourcefulness, leadership, and responsible citizenship.

The JHS curriculum has been designed to ensure that learners are adequately equipped to transition seamlessly into SHS, where they will be equipped with the relevant knowledge, skills and competencies. The SHS curriculum emphasises character building, acquisition of 21st Century skills and competencies and nurturing core values within an environment of quality education to ensure the transition to further study, the world of work and adult life. This requires the delivery of robust secondary education that meets the varied learning needs of the youth in Ghana. The SHS curriculum, therefore, seeks to develop learners to become technology-inclined, scientifically literate, good problem-solvers who can think critically and creatively and are equipped to communicate with fluency, and possess the confidence and competence to participate fully in Ghanaian society as responsible local and global citizens – (referred to as 'Glocal citizens').

The SHS curriculum is driven by the nation's core values of truth, integrity, diversity, equity, discipline, self-directed learning, self-confidence, adaptability and resourcefulness, leadership, and responsible citizenship, and with the intent of achieving the Sustainable Development Goal 4: 'Inclusive, equitable quality education and life-long learning for all'. The following sections elaborate on the critical competencies required of every SHS learner:

Gender Equality and Social Inclusion (GESI)

- Appreciate their uniqueness about others.
- Pay attention to the uniqueness and unique needs of others.
- Value the perspective, experience, and opinion of others.
- Respect individuals of different beliefs, political views/ leanings, cultures, and religions.
- Embrace diversity and practise inclusion.
- Value and work in favour of a democratic and inclusive society.
- Be conscious of the existence of minority and disadvantaged groups in society and work to support them.
- Gain clarity about misconceptions/myths about gender, disability, ethnicity, age, religion, and all other excluded groups in society
- Interrogate and dispel their stereotypes and biases about gender and other disadvantaged and excluded groups in society.
- Appreciate the influence of socialisation in shaping social norms, roles, responsibilities, and mindsets.
- Identify injustice and advocate for change.
- Feel empowered to speak up for themselves and be a voice for other disadvantaged groups.

21st Century Skills and Competencies

In today's fast-changing world, high school graduates must be prepared for the 21st Century world of work. The study of Mathematics, Science, and Language Arts alone is no longer enough. High school graduates need a variety of skills and competencies to adapt to the global economy. Critical thinking, creativity, collaboration, communication, information literacy, media literacy, technology literacy, flexibility, leadership, initiative, productivity, and social skills are needed. These skills help learners to keep up with today's fast-paced job market. Employers want workers with more than academic knowledge. The 21st Century skills and competencies help graduates navigate the complex and changing workplace. Also, these help them become active citizens who improve their communities. Acquisition of 21st Century skills in high school requires a change in pedagogy from the approach that has been prevalent in Ghana in recent years. Teachers should discourage and abandon rote memorisation and passive learning. Instead, they should encourage active learning, collaboration, and problem-solving, project-based, inquiry-based, and other learner-centred pedagogy should be used. As well as aligning with global best practices, these approaches also seek to reconnect formal education in Ghana with values-based indigenous education and discovery-based learning which existed in Ghana in pre-colonial times. This is aligned with the 'glocal' nature of this curriculum, connecting with Ghana's past to create confident citizens who can engage effectively in a global world. Digitalisation, automation, technological advances and the changing nature of work globally mean that young people need a new set of skills, knowledge and competencies to succeed in this dynamic and globalised labour market.

Critical Thinking and Problem-Solving Competency

- Ability to question norms, practices, and opinions, to reflect on one's values, perceptions, and actions.
- Ability to use reasoning skills to come to a logical conclusion.
- Being able to consider different perspectives and points of view
- Respecting evidence and reasoning
- Not being stuck in one position
- Ability to take a position in a discourse
- The overarching ability to apply different problem-solving frameworks to complex problems and develop viable, inclusive, and equitable solution options that integrate the above-mentioned competencies, promote sustainable development,

Creativity

- Ability to identify and solve complex problems through creative thinking.
- Ability to generate new ideas and innovative solutions to old problems.
- Ability to demonstrate originality and flexibility in approaching tasks and challenges.
- Collaborating with others to develop and refine creative ideas
- Ability to incorporate feedback and criticism into the creative process
- Utilising technology and other resources to enhance creativity
- Demonstrating a willingness to take risks and experiment with new approaches
- Adapting to changing circumstances and further information to maintain creativity

- Integrating multiple perspectives and disciplines to foster creativity
- Ability to communicate creative ideas effectively to a variety of audiences

Collaboration

- Abilities to learn from others; to understand and respect the needs, perspectives, and actions of others (empathy)
- Ability to understand, relate to and be sensitive to others (empathic leadership)
- Ability to deal with conflicts in a group
- Ability to facilitate collaborative and participatory problem-solving
- Ability to work with others to achieve a common goal.
- Ability to engage in effective communication, active listening, and the ability to compromise.
- Ability to work in groups on projects and assignments.

Communication

- Know the specific literacy and language of the subjects studied
- Use language for academic purposes
- Communicate effectively and meaningfully in a Ghanaian Language and English Language
- Communicate confidently, ethically, and effectively in different social contexts.
- Communicate confidently and effectively to different participants in different contexts
- Ability to communicate effectively verbally, non-verbally and through writing.
- Demonstrate requisite personal and social skills that are consistent with changes in society
- Ability to express ideas clearly and persuasively, listen actively, and respond appropriately
- Ability to develop digital communication skills such as email etiquette and online collaboration.
- Ability to engage in public speaking, debate, and written communication.

Learning for Life

- Understand subject content and apply it in different contexts
- Apply mathematical and scientific concepts in daily life
- Demonstrate mastery of skills in literacy, numeracy, and digital literacy.
- Develop an inquiry-based approach to continual learning.
- Be able to understand higher-order concepts and corresponding underlying principles.
- Participate in the creative use of the expressive arts and engage in aesthetic appreciation.
- Use and apply a variety of digital technologies
- Be digitally literate with a strong understanding of ICT and be confident in its application.
- Be equipped with the necessary qualifications to gain access to further and higher education and the world of work and adult life
- Ability to apply knowledge practically in the workplace so that they are able to utilise theory by translating it into practice.
- Develop their abilities, gifts and talents to be able to play a meaningful role in the development of the country
- Be able to think critically and creatively, anticipate consequences, recognise opportunities and be risk-takers
- Ability to pursue self-directed learning with the desire to chart a path to become effective lifelong learners.
- Independent thinkers and doers who show initiative and take action.
- Ability to innovate and think creatively, building on their knowledge base so that they take risks to achieve new goals
- Ability to think critically and solve problems so that they become positive change agents at work, in further study and in their personal lives.
- Be motivated to adapt to the changing needs of society through self-evaluation and ongoing training
- Be able to establish and maintain innovative enterprises both individually and in collaboration with others.
- Be able to ethically prioritise economic values to ensure stability and autonomy
- Show flexibility and preparedness to deal with job mobility
- Be committed towards the improvement of their quality of life and that of others
- Feel empowered in decision-making processes at various levels e.g., personal, group, class, school, etc.

- Be able to seek and respond to assistance, guidance and/or support when needed.
- Ability to make and adhere to commitments.
- Adopt a healthy and active lifestyle and appreciate how to use leisure time well.
- Be enthusiastic, with the knowledge, understanding and skill that enable them to progress to tertiary level, the world of work and adult life.
- Ability to transition from school to the world of work or further study by applying knowledge, skills and attitudes in new situations.
- Be independent, have academic and communication skills such as clarity of expression (written and spoken), and the ability to support their arguments.
- Be innovative and understand the 21st Century skills and competencies and apply them to everyday life.

Global and Local (Glocal) Citizenship

- Appreciate and respect the Ghanaian identity, culture, and heritage
- Be conscious of current global issues and relate well with people from different cultures
- Act in favour of the common good, social cohesion and social justice
- Have the requisite personal and social skills to handle changes in society
- Appreciate the impact of globalisation on the society.
- Ability to be an honest global citizen displaying leadership skills and moral fortitude with an understanding of the wider world and how to enhance Ghana's standing.

Systems Thinking Competency

- Ability to recognise and understand relationships
- Ability to analyse complex systems
- Ability to think of how systems are embedded within different domains and different scales
- Ability to deal with uncertainty

Normative Competency

- Ability to understand and reflect on the norms and values that underlie one's actions
- Ability to negotiate values, principles, goals, and targets, in a context of conflicts of interests and trade-offs, uncertain knowledge and contradictions

Anticipatory Competency

- Ability to understand and evaluate multiple futures – possible, probable, and desirable
- Ability to create one's vision for the future.
- Ability to apply the precautionary principle
- Ability to assess the consequences of actions
- Ability to deal with risks and changes

Strategic Competency

- Ability to collectively develop and implement innovative actions that further a cause at the local level and beyond.
- Ability to understand the bigger picture and the implications of smaller actions on them

Self-Awareness Competency

- The ability to reflect on one's role in the local community and (global) society
- Ability to continually evaluate and further motivate one's actions
- Ability to deal with one's feelings and desires

Social Emotional Learning (SEL): Five Core Competencies with Examples

1. *Self-Awareness*

Understanding one's emotions, thoughts, and values and how they influence one's behaviour in various situations. This includes the ability to recognise one's strengths and weaknesses with a sense of confidence and purpose. For instance:

- *Integrating personal and social identities;*
- *Identifying personal, cultural, and linguistic assets;*
- *Identifying one's emotions;*
- *Demonstrating honesty and integrity;*
- *Connecting feelings, values, and thoughts;*

- *Examining prejudices and biases;*
- *Experiencing self-efficacy;*
- *Having a growth mindset;*
- *Developing interests and a sense of purpose;*

2. *Self-Management*

The capacity to control one's emotions, thoughts, and actions in a variety of situations and to realise one's ambitions. This includes delaying obtaining one's desires, dealing with stress, and feeling motivated and accountable for achieving personal and group goals. For instance:

- *Managing one's emotions;*
- *Identifying and utilising stress-management strategies;*
- *Demonstrating self-discipline and self-motivation;*
- *Setting personal and group goals;*
- *Using planning and organisation skills;*
- *Having the courage to take the initiative;*
- *Demonstrating personal and collective agency;*

3. *Social Awareness*

The capacity to comprehend and care for others regardless of their backgrounds, cultures, and circumstances. This includes caring for others, understanding larger historical and social norms for behaviour in different contexts, and recognising family, school, and community resources and supports. For instance:

- *Recognising others' strengths*
- *Demonstrating empathy and compassion*
- *Caring about others' feelings*
- *Understanding and expressing gratitude*
- *Recognising situational demands and opportunities*
- *Understanding how organisations and systems influence behaviour*

4. *Relationship Skills*

The capacity to establish and maintain healthy, beneficial relationships and adapt to various social situations and groups. This includes speaking clearly, listening attentively, collaborating, solving problems and resolving conflicts as a group, adapting to diverse social and cultural demands and opportunities, taking the initiative, and asking for or offering assistance when necessary. For instance:

- *Communicating effectively;*
- *Building positive relationships;*
- *Demonstrating cultural competence;*
- *Working as a team to solve problems;*
- *Constructively resolving conflicts;*
- *Withstanding negative social pressure;*
- *Taking the initiative in groups;*
- *Seeking or assisting when needed;*
- *Advocating for the rights of others.*

5. *Responsible Decision-Making*

The capacity to make thoughtful and constructive decisions regarding acting and interacting with others in various situations. This includes weighing the pros and cons of various personal, social, and group well-being actions. For example:

- *Demonstrating curiosity and an open mind;*
- *Solving personal and social problems;*
- *Learning to make reasonable decisions after analysing information, data, and facts;*
- *Anticipating and evaluating the effects of one's actions;*
- *Recognising that critical thinking skills are applicable both inside and outside of the classroom;*
- *Reflecting on one's role in promoting personal, family, and community well-being;*
- *Evaluating personal, interpersonal, community, and institutional impacts*

Learning and Teaching Approaches

Learning and teaching should develop learners as self-directed and lifelong learners. Learners must be helped to build up deep learning skills and competencies to develop the ability to acquire, integrate and apply knowledge and skills to solve authentic and real-life problems. Learners need to be exposed to a variety of learning experiences to enable them to collaborate with others, construct meaning, plan, manage, and make choices and decisions about their learning. This will allow them to internalise newly acquired knowledge and skills and help them

to take ownership of their education. The 21st Century skills and competencies describe the relevant global and contextualised skills that the SHS curriculum is designed to help learners acquire in addition to the 4Rs (Reading, wRiting, aRithmetic and cReativity). These skills and competencies, as tools for learning and teaching and skills for life, will allow learners to become critical thinkers, problem-solvers, creators, innovators, good communicators, collaborators, digitally literate, and culturally and globally sensitive citizens who are life-long learners with a keen interest in their personal development and contributing to national development.

Given the diverse needs of learners, teachers need to have a thorough grasp of the different pedagogies as they design and enact meaningful learning experiences to meet the needs of different learners in the classroom. The teaching-learning techniques and strategies should include practical activities, discussion, investigation, role play, problem-based, context-based, and project-based learning. Active learning strategies have become increasingly popular in education as they provide learners with meaningful opportunities to engage with the material. These strategies emphasise the use of creative and inclusive pedagogies and learner-centred approaches anchored on authentic and enquiry-based learning, collaborative and cooperative learning, differentiated teaching and learning, holistic learning, and cross-disciplinary learning. They include experiential learning, problem-based learning, project-based learning, and talk-for-learning approaches. Some of the pedagogical exemplars to guide learning and teaching of the SHS curriculum include:

- **Experiential Learning:** Experiential learning is a hands-on approach to learning that involves learners in real-world experiences. This approach focuses on the process of learning rather than the result. Learners are encouraged to reflect on their experiences and use them to develop new skills and knowledge. Experiential learning can take many forms, including internships, service learning, and field trips. One of the main benefits of experiential learning is that it allows learners to apply what they have learned in the classroom to real-world situations. This can help them develop a deeper understanding of the material and make connections between different concepts. Additionally, experiential learning can help learners develop important skills such as critical thinking, problem-solving and communication.
- **Problem-Based Learning:** Problem-based learning is an approach that involves learners in solving real-world problems. Learners are presented with a problem or scenario and are asked to work together to find a solution. This approach encourages learners to take an active role in their learning and helps them develop important skills such as critical thinking and problem-solving. One of the main benefits of problem-based learning is that it encourages learners to take ownership of their learning. By working together to solve problems, learners can develop important skills such as collaboration and communication. Additionally, problem-based learning can help learners develop a deeper understanding of the material as they apply it to real-world situations.
- **Project-Based Learning:** Project-based learning is a hands-on approach to learning that involves learners in creating a project or product. This approach allows learners to take an active role in their learning and encourages them to develop important skills such as critical thinking, problem-solving, collaboration, and communication. One of the main benefits of project-based learning is that it allows learners to apply what they have learned in the classroom to real-world situations. Additionally, project-based learning can help learners develop important skills from each other and develop a deeper understanding of the material.
- **Talk for Learning Approaches:** Talk for learning approaches (TfL) are a range of techniques and strategies that are used to encourage learners to talk by involving them in discussions and debates about the material they are learning. This approach encourages learners to take an active role in their learning and helps them develop important skills such as critical thinking, collaboration and communication and also makes them develop confidence. One of the main benefits of TfL is that it encourages learners to think deeply about the material they are learning. By engaging in discussions and debates, learners can develop a deeper understanding of the material and make connections between different concepts.
- **Initiating Talk for Learning:** Initiating talk for learning requires the use of strategies that would encourage learners to talk in class. It helps learners to talk and participate meaningfully and actively in the teaching and learning process. Apart from developing skills such as communication and critical thinking, it also helps learners to develop confidence. Some strategies for initiating talk among learners are Activity Ball; Think-Pair-Share; Always, Sometimes, Never True; Matching and Ordering of Cards.
- **Building on What Others Say:** Building on what others say is an approach that involves learners in listening to and responding to their classmates'

ideas. This approach encourages learners to take an active role in their learning and helps them develop important skills such as critical thinking and communication. One of the main benefits of building on what others say is that it encourages learners to think deeply about the material they are learning. By listening to their classmates' ideas, learners can develop a deeper understanding of the material and make connections between different concepts. Additionally, building on what others say can help learners develop important skills such as collaboration and reflection. Some of the strategies to encourage learners to build on what others say are brainstorming, concept cartoons, pyramid discussion, and 5 Whys, amongst others.

- **Managing Talk for Learning:** Managing talk for learning requires the use of various strategies to effectively coordinate what learners say in class. Effective communication is a crucial aspect of learning in the classroom. Teachers must manage talk to ensure that learners are engaged, learning, and on-task in meaningful and purposeful ways. Some strategies for managing learners' contributions are debates, think-pair-share, sage in the circle etc.
- **Structuring Talk for Learning:** One effective way to shape learners' contributions is to structure classroom discussions. Structured discussions provide a framework for learners to engage in meaningful dialogue and develop critical thinking skills. Teachers can structure discussions by providing clear guidelines, such as speaking one at a time, listening actively, and building on each other's ideas. One popular structured discussion technique is the "think-pair-share" method. In this method, learners think about a question or prompt individually, and then pair up with a partner to discuss their ideas. Finally, the pairs share their ideas with the whole class. This method encourages all learners to participate and ensures that everyone has a chance to share their thoughts. Another effective way to structure talk for learning is to use open-ended questions. Open-ended questions encourage learners to think deeply and critically about a topic. They also promote discussion and collaboration among learners. Teachers can use open-ended questions to guide classroom discussions and encourage learners to share their ideas and perspectives. Other strategies that can be used are Concept/Mind Mapping, "Know," "Want to Know," "Learned" (KWL); Participatory Feedback; and the 5 Whys.
- **Diamond Nine:** The Diamond Nine activity is a useful tool for managing talk for learning in the classroom. This activity involves ranking items or ideas in order of importance or relevance. Learners work in groups to arrange cards or sticky notes with different ideas or concepts into a diamond shape, with the most important idea at the top and the least important at the bottom. The Diamond Nine activity encourages learners to think critically about a topic and prioritise their ideas. It also promotes collaboration and discussion among group members. Teachers can use this activity to introduce a new topic, review material, or assess student understanding.
- **Group Work/Collaborative Learning:** Group work or collaborative learning are effective strategies for managing talk for learning in the classroom. These strategies encourage learners to work together to solve problems, share ideas, and learn from each other. Group work and collaborative learning also promote communication and collaborative skills that are essential for success in the workplace and in life. To implement group work effectively, teachers must provide clear guidelines and expectations for group members. They should also monitor group work to ensure that all learners are participating and on-task. Teachers can also use group work as an opportunity to assess individual student understanding and participation.
- **Inquiry-Based Learning:** Learners explore and discover new information by asking questions and investigating.
- **Problem-Based Learning:** Learners are given real-world problems to solve and must use critical thinking and problem-solving skills.
- **Project-Based Learning:** Learners work on long-term projects that relate to real-world scenarios.
- **Flipped Classroom:** Learners watch lectures or instructional videos at home and complete assignments and activities in class.
- **Mastery-Based Learning:** Learners learn at their own pace and only move on to new material once they have mastered the current material.
- **Gamification:** Learning is turned into a game-like experience with points, rewards, and competition.

These strategies provide learners with opportunities to engage with the material in meaningful ways and develop important skills such as critical thinking, problem-solving, collaboration, and communication. By incorporating these strategies into their teaching, teachers can help learners develop a deeper understanding of the material and prepare them for success in the real world. Effective communication is essential for learning in the classroom. Teachers must manage talk to ensure that learners are engaged in learning and on-task. Strategies such as structuring

talk for learning, using Diamond Nine activities, and implementing group work/ collaborative learning can help teachers manage talk effectively and promote student learning and engagement. By implementing these strategies, teachers can create a positive and productive learning environment where all learners can succeed.

Universal Design for Learning (UDL) in the SHS Curriculum

The design of the curriculum uses UDL to ensure the creation of flexible learning environments that can accommodate a wide range of learner abilities, needs, and preferences. The curriculum is designed to provide multiple means of engagement, representation, and action and expression, so teachers can create a more inclusive and effective learning experience for all learners. UDL is beneficial for all learners, but it is particularly beneficial for learners needing special support and learners who may struggle with traditional teaching approaches. The integration of UDL in the pedagogy is aimed at making learning accessible to everyone and helping all learners reach their full potential. For instance, teachers need to:

- incorporate multiple means of representation into their pedagogy, such as using different types of media and materials to present information.
- provide learners with multiple means of action and expression, such as giving them options for how they can demonstrate their learning.
- consider incorporating multiple means of engagement into their choice of pedagogy, such as incorporating games or interactive activities to make learning more fun and engaging.

By doing these, teachers can help ensure that the curriculum is accessible and effective for all learners, regardless of their individual needs and abilities.

Curriculum and Assessment Design: Revised Bloom's Taxonomy and Webb's Depth of Knowledge

The design of this curriculum uses the revised Bloom's Taxonomy and Webb's Depth of Knowledge (DoK) as frameworks to design what to teach and assess.

The Revised Bloom's Taxonomy provides a framework for designing effective learning experiences. Understanding the different levels of learning, informed the creation of activities and assessments that challenge learners at the appropriate level and help them progress to higher levels of thinking. Additionally, the framework emphasises the importance of higher-order thinking skills, such as analysis, evaluation, and creation, which are essential for success in today's complex and rapidly changing world. This framework is a valuable tool for educators who want to design effective learning experiences that challenge students at the appropriate level and help them develop higher-order thinking skills. By understanding the six levels of learning and incorporating them into their teaching, educators can help prepare students for success in the 21st century. The six hierarchical levels of the revised Bloom's Taxonomy are:

1. **Remember** – At the foundation is learners' ability to remember. That is retrieving knowledge from long-term memory. This level requires learners to recall concepts—identify, recall, and retrieve information. Remembering is comprised of identifying, listing, and describing. Retrieving relevant knowledge from long-term memory includes, recognising, and recalling is critical for this level.
2. **Understand** – At understanding, learners are required to construct meaning that can be shown through clarification, paraphrasing, representing, comparing, contrasting and the ability to predict. This level requires interpretation, demonstration, and classification. Learners explain and interpret concepts at this level.
3. **Apply** – This level requires learners' ability to carry out procedures at the right time in a given situation. This level requires the application of knowledge to novel situations as well as executing, implementing, and solving problems. To apply, learners must solve multi-step problems.
4. **Analyse** – The ability to break things down into their parts and determine relationships between those parts and being able to tell the difference between what is relevant and irrelevant. At this level, information is deconstructed, and its relationships are understood. Comparing and contrasting information and organising it is key. Breaking material into its constituent parts and detecting how the parts relate to one another and an overall structure or purpose is required. The analysis also includes differentiating, organising and attributing.
5. **Evaluate** – The ability to make judgments based on criteria. To check whether there are fallacies and inconsistencies. This level involves information evaluation, critique, examination, and formulation of hypotheses.
6. **Create** – The ability to design a project or an experiment. To create, entails learners bringing something new. This level requires generating information—planning, designing, and constructing.

Webb's Depth of Knowledge (DoK) is a framework that helps educators and learners understand the level of cognitive engagement required for different types of learning tasks. The framework includes four levels. By understanding the four DoK levels, educators can design learning activities that challenge students to engage in deeper thinking and problem-solving. DoK is an essential tool for designing effective instruction and assessments. By understanding the different levels of DoK, teachers can design instruction and assessments that align with what they intend to achieve. DoK is a useful tool for differentiating instruction and providing appropriate challenges for all learners. Teachers can use DOK to identify students who need additional support or those who are ready for more advanced tasks. The four levels of Webb's' DoK assessment framework are:

- **Level 1: Recall and Reproduction –** Assessment at this level is on recall of facts, concepts, information, and procedures—this involves basic knowledge acquisition. Learners are asked specific questions to launch activities, exercises, and assessments. The assessment is focused on recollection and reproduction.
- **Level 2: Skills of Conceptual Understanding –** Assessment at this level goes beyond simple recall to include making connections between pieces of information. The learner's application of skills and concepts is assessed. The assessment task is focused more on the use of information to solve multi-step problems. A learner is required to make decisions about how to apply facts and details provided to them.
- **Level 3: Strategic Reasoning** – At this level, the learner's strategic thinking and reasoning which is abstract and complex is assessed. The assessment task requires learners to analyse and evaluate composite real-world problems with predictable outcomes. A learner must apply logic, employ problem-solving strategies, and use skills from multiple subject areas to generate solutions. Multitasking is expected of learners at this level.
- **Level 4: Extended Critical Thinking and Reasoning –** At this level of assessment, the learner's extended thinking to solve complex and authentic problems with unpredictable outcomes is the goal. The learner must be able to strategically analyse, investigate, and reflect while working to solve a problem, or changing their approach to accommodate new information. The assessment requires sophisticated and creative thinking. As part of this assessment, the learner must know how to evaluate their progress and determine whether they are on track to a feasible solution for themselves.

The main distinction between these two conceptual frameworks is what is measured. The revised Bloom's Taxonomy assesses the cognitive level that learners must demonstrate as evidence that a learning experience occurred. The DoK, on the other hand, is focused on the context—the scenario, setting, or situation—in which learners should express their learning. In this curriculum, the revised Bloom's taxonomy guided the design, and the DoK is used to guide the assessment of learning. The taxonomy provides the instructional framework, and the DoK analyses the assignment specifics. It is important to note that Bloom's Taxonomy requires learners to master the lower levels before progressing to the next. So, suppose the goal is to apply a mathematical formula. In that case, they must first be able to identify that formula and its primary purpose (remember and understand). The cognitive rigour is therefore presented in incremental steps to demonstrate the learning progression. When measuring assessments in DoK, learners move fluidly through all levels. In the same example, while solving a problem with a formula, learners recall the formula (DoK 1) to solve the problem (DoK 2 and DoK 3). Depending on the difficulty of the problem to be solved, the learner may progress to DoK 4.

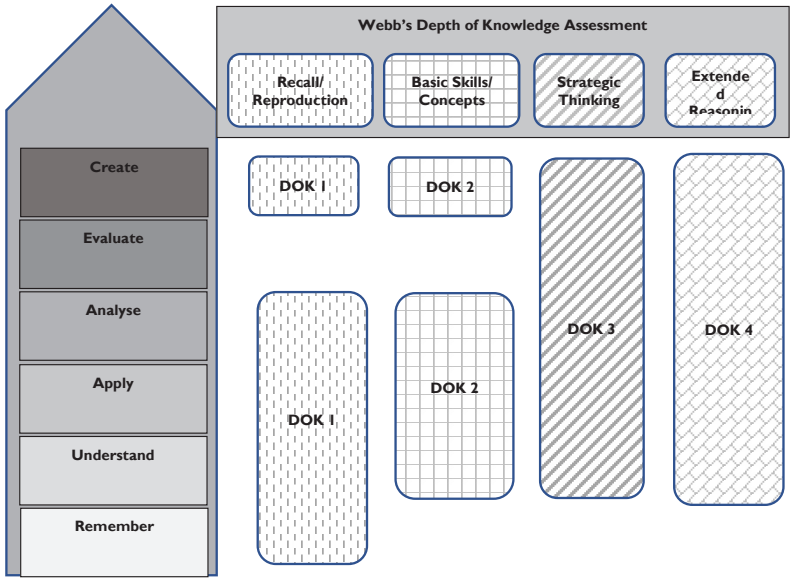

Figure 1: Revised Bloom Taxonomy combined with Webb's Depth of Knowledge for Teaching and Assessment

The structure of teaching and the assessment should align with the six levels of Bloom's knowledge hierarchy and DoK shown in Figure 1. Each level of DoK should be used to assess specific domains of Bloom's Taxonomy as illustrated in the table below:

Depth of Knowledge (DoK) Assessment	Bloom's Taxonomy applied to DoK
• Level 1: Recall and Reproduction	• Remembering, Understanding, Application, Analysis and Creation
• Level 2: Basic Skills and Concepts	• Understanding, Application, Analysis and Creation
• Level 3: Strategic Thinking	• Understanding, Application, Analysis, Evaluation and Creation
• Level 4: Extended Reasoning	• Understanding, Application, Analysis, Evaluation and Creation

In line with the National Pre-Tertiary Learning and Assessment Framework, the Secondary Education Assessment Guide (SEAG) requires that classroom assessments should cover **Assessment as learning (AaL), Assessment of learning (AoL) and Assessment for learning (AfL).** Therefore, teachers should align the Revised Bloom's Taxonomy with the DoK framework of assessment. Formative assessments should include classroom discussions, project-based assignments, and self-reflection exercises, while summative assessments should include standardised tests and rubric-based evaluations of learners' work. It is important to seek feedback from learners themselves, as they may have unique insights into how well they are developing these skills in the classroom.

To assess 21st Century skills and competencies in the classroom, teachers will have to use a combination of both formative and summative assessments to evaluate learners' acquisition of these skills and competencies. For instance:

- Identify the specific 21st Century skills and competencies to be assessed. For instance, you might want to assess *critical thinking, problem-solving, or creativity*.
- Align the skills and competencies with the DoK levels. For example, lower DoK levels might be more appropriate for assessing basic knowledge and comprehension, whereas higher DoK levels might be more appropriate for assessing more complex skills such as *analysis, synthesis, and evaluation*.
- Develop assessment items that align with the DoK levels and the skills and competencies you want to assess. These items should be designed to elicit evidence of learning across the different levels of the DoK framework.
- Administer the assessment and collect data. Analyse the data to gain insights into student learning and identify areas where learners may need additional support or instruction.

The DoK framework is a powerful tool for assessing the acquisition of 21st Century skills and competencies in the classroom, helping teachers to better understand how learners are learning and identify areas for improvement.

Educational success is no longer about producing content knowledge, but rather about extrapolating from what we know and applying the knowledge creatively in new situations.

The overall assessment of learning at SHS should be aligned with the National Pre-Tertiary Learning and Assessment Framework and the Secondary Education Assessment Guide. Formative and summative assessment strategies must be used.

Definition of Key Terms and Concepts in the Curriculum

- **Learning Outcomes:** It is a statement that defines the knowledge, skills, and abilities that learners should possess and be able to demonstrate after completing a learning experience. They are specific, measurable, attainable, and aligned with the content standards of the curriculum. It helps the teachers to determine what to teach, how to teach, and how to assess learning. Also, it communicates expectations to learners and helps them to better master the subject.
- **Learning Indicators:** They are measures that allow teachers to observe progress in the development of capacities and skills. They provide a simple and reliable means to evaluate the quality and efficacy of teaching practices, content delivery, and attainment of learning outcomes.
- **Content Standards:** It is a statement that defines the knowledge, skills, and understanding that learners are expected to learn in a particular subject area or grade level. They provide a clear target for learners and teachers and help focus resources on learner achievement.
- **Pedagogical Exemplars:** They are teaching examples used to convey values and standards to learners. Pedagogical Exemplars are usually demonstrated through teacher behaviour.
- **Assessment:** It is the systematic collection and analysis of data about learners' learning to improve the learning process or make a judgement on learner achievement levels. Assessment is aimed at developing a deep understanding of what learners know, understand, and can do with their knowledge because of their educational experiences. Assessment involves the use of empirical data on learners' learning to improve learning. Assessment is an essential aspect of the teaching and learning process in education, which enables teachers to assess the effectiveness of their teaching by linking learner performance to specific learning outcomes.
- **Teaching and Learning Resources:** Teaching and learning resources are essential tools for teachers to provide high-quality education to their learners. These resources can take various forms, including textbooks, audiovisual materials, online resources, and educational software. It is also important to avoid stereotypes and use inclusive language in teaching and learning resources. This means avoiding language that reinforces negative stereotypes and using language that is respectful and inclusive of all individuals regardless of their background. Using a consistent tone, style, and design is very important.

PHILOSOPHY, VISION AND GOAL OF FOOD AND NUTRITION

Philosophy

The next generation of learners in Food and Nutrition will be empowered through observation, curiosity, innovation, and exposure to practically relevant concepts that link food to health, culture, environment, and economic development. The curriculum promotes hands-on activities that encourage learners to apply scientific principles in food preparation, nutrition planning, food preservation, and sustainable consumption. Delivered in a learner-centred environment, the subject fosters holistic development and provides pathways for further education and careers in nutrition, food science, hospitality, and public health.

Vision

The subject envisions to equip learners with lifelong skills and competencies in Food and Nutrition to make informed dietary choices, promote healthy lifestyles, ensure food safety, and contribute to food-related entrepreneurship and national development.

Goal

To equip learners with 21st-century skills, knowledge, attitudes, and values in Food and Nutrition that prepares them for higher education, food-related professions, and responsible living in a rapidly changing world. Learners will develop critical thinking, problem-solving, creativity, and collaboration skills in food-related contexts.

Contextual Issues

Potential Barriers	Possible Solutions
Content overload	Topics have been combined to reduce the content overload and duplication and focus on relevant learning areas and making the content practically oriented.
Inappropriate methodology and assessment techniques used in teaching	Use of creative and gender responsive pedagogies and assessment strategies to cater for assessment for learning, and as learning to guide teaching and learning. Incorporate relevant ICT tools training in the Continuous Professional Development (CPD) session of the writing template. Use pre-recorded or YouTube videos and internet for Open Educational Resources (OER).
Unavailability of laboratories, equipment and materials for practical work	Recommendations have been made for teachers to identify specific local materials, tools and industries that teachers can explore to help learners appreciate the practical nature of the subject. Also, they can use pre-recorded or YouTube videos and internet for Open Educational Resources (OER).
The misconception that Home Economics is for low academic achievers and females	Recommendations have been made for Gender Equality and Social Inclusion (GESI) to be used to create awareness about balanced role models and case studies of the achievements in Home Economics.

Rationale

Food and Nutrition is a practical and scientific subject that centres on the individual, family, and society, exploring their interactions with food and its broader implications. It enables learners to understand the role of nutrition in promoting physical, emotional, and mental well-being, and supports informed food choices based on local and global trends.

The curriculum addresses several core areas:

- Ghanaian Food Culture: Promotes appreciation for indigenous foods, traditional cooking methods, and the cultural significance of food in social and ceremonial practices.
- Food Safety and Hygiene: Empowers learners with knowledge and practices to prevent foodborne illnesses, promotes sanitation, and maintain food quality from farm to fork.
- Nutrition and Health: Focuses on the role of nutrients, meal planning, and balanced diets in supporting growth, preventing lifestyle diseases, and enhancing productivity.
- Sustainability in Food Systems: Encourages sustainable farming, reduction of food waste, and environmentally responsible food choices.
- Food Preservation and Processing: Builds skills in traditional and modern preservation methods to reduce food spoilage and ensure year-round food availability.
- Entrepreneurship in Food and Nutrition: Prepares learners to explore career opportunities in catering, food production, dietetics, and agri-business.

Through experiential learning and project-based activities, learners gain practical skills such as cooking, menu planning, food packaging, and preservation, enabling them to become self-reliant and economically empowered. The subject also fosters values such as responsibility, innovation, teamwork, and respect for cultural diversity in food practices.

FOOD AND NUTRITION CURRICULUM DEVELOPMENT PANEL

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SCOPE AND SEQUENCE

Food and Nutrition Summary

S/N	STRAND	SUB-STRAND	YEAR 1			YEAR 2			YEAR 3		
			CS	LO	LI	CS	LO	LI	CS	LO	LI
1.	Nutrition and Health	Food For Healthy Living	3	2	8	4	4	11	2	2	6
		Food Security	2	2	5	2	2	5	2	2	4
2.	Food Production	Food Production Technology	2	2	5	2	2	4	2	2	4
		Food Processing Techniques	2	2	5	2	2	7	1	1	4
Total			**9**	**8**	**23**	**10**	**10**	**27**	**7**	**7**	**18**

Overall Totals (SHS 1 – 3)

Content Standards	**26**
Learning Outcomes	**25**
Learning Indicators	**68**

YEAR ONE

Subject FOOD AND NUTRITION
Strand 1. NUTRITION AND HEALTH
Sub-Strand 1. FOOD FOR HEALTHY LIVING

Learning Outcomes	21st Century Skills and Competencies	GESI[1], SEL[2] and Shared National Values
1.1.1.LO.1		
Apply knowledge of food commodities to select and utilise food appropriately to meet the nutritional needs of individuals and families for a healthy lifestyle.	**Communication and Collaboration skills:** • Provide oral and/or written explanation of concepts in food and nutrition. • Ability to interact, speak clearly and share ideas on the classification of the various food commodities. • Ability to understand other people's perspectives and respecting their views. **Critical thinking and problem-solving skills:** • Able to ask questions, learn from peers, build on own ideas to apply knowledge to classify food into six categories. • Can use experiences to solve nutritional problems. • Ability to identify complex problems and explain how these differ from simple problems. **Metacognition:** Ability to reflect on previous knowledge and explain concepts in food and nutrition and classify food. **Personal development and Leadership:** • Ability to contribute to team discussions to reach a consensus on what action should be taken. • Exhibit ability to allocate tasks between different team members and can identify when their peers might need support or assistance. **Digital literacy:** Ability to surf the internet for credible information.	**GESI:** Learners having experienced a teaching approach that ensures gender equality and social inclusion, where they work with each other in an inclusive way; cross-sharing knowledge and understanding among groups and individuals lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/myths about food. • Interrogate their stereotypes and biases about the role men, women and people with special needs play in the selection and use of food. • Identify injustice, especially in recognition of the contributions of individuals (male, female, SEN) in food preparation and services. **SEL:** Learners having been given the opportunity to experience varied teaching approaches in an enabling environment will be

[1] Gender Equality and Social Inclusion
[2] Socio-Emotional Learning

	Creativity and Innovation skills: Doing things in new ways that extend learners' learning and decision making. **Cultural identity and global citizenship:** Learn about food habits/lifestyles of different cultures.	equipped with social emotional learning skills to: • Build self-confidence. • Identify how others may be feeling about their choice of food. • Reflect on positive and negative consequences of their choice of food for healthy living. • Identify range of options for completing their work. **National Values:** • Tolerance • Friendliness • Open mindedness • Patience • Hard work • Humility
1.1.1.LO.2		
Apply scientific knowledge of nutrients and their effects on growth and development to promote healthy living.	**Communication and Collaboration skills:** • Ability to express ideas during sharing of experiences and group work. • Share ideas in group orally and in written. • Ability to express ideas during pair and group work. **Metacognition:** Thinking deeply and learn on their own about the various nutrients found in foods and its effects on growth and development in the body. **Personal development and Leadership skills:** • Able to articulate and explain one's feelings in a group situation and working with others. • Take leading roles in group work.	**GESI:** Learners having experienced a teaching approach that ensures gender equality and social inclusion, where they work with each other in an inclusive way; cross-sharing knowledge and understanding among groups and individuals lead them to: • Embrace diversity and practice inclusion. • Respect individuals of different backgrounds. • Interrogate their stereotypes and biases about the role men, women and people with special needs play in the selection of food nutrients and its effects on growth and development in the body.

	Cultural identity and global citizenship: Ability to understand nutrients found in foods and its effects on growth and development in the body. **Critical and analytical thinking skills**: • Develop imagination, research and questioning skills on food nutrients and its effects on development. • Ability to use resources and skills to demonstrate how to apply Scientific knowledge of nutrients found in foods and its effects on growth and development in the body. **Digital literacy**: • Ability to use ICT tools to search and discuss nutrients found in foods and its effects on growth and development in the body issues of food nutrients. • Can use ICT tools to surf for information.	**SEL:** Learners having been given the opportunity to experience varied teaching approaches in an enabling environment will be equipped with social emotional learning skills to: • Expand their emotional vocabulary and their abilities to apply Scientific knowledge of nutrients found in foods and its effects on growth and development in the body. • Demonstrate respect for diversity among their group and find ways for learners to share their Cultural backgrounds and experiences with respect to food nutrients. • Offer a range of strategies to manage work in a team. • Understand nutrients found in foods and its effects on growth and development in the body. **National Values**: • Tolerance • Friendliness • Open mindedness • Patience • Hard work • Humility

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century Skills and GESI	Assessment
1.1.1.CS.1	1.1.1.LI.1	1.1.1.AS.1
Demonstrate knowledge and understanding of food commodities, select and use food to meet the needs of individuals and families for healthy living	**Explain basic concepts in food and nutrition and their implication to healthy living.** **Talk for Learning Approaches:** In pairs/groups, use think-pair-share, mingling/talking point to review knowledge on food and nutrition learnt in JHS Career Technology. **Group Work and Collaborative Learning Approaches**: • In mixed ability groups, learners discuss the basic concepts in food and nutrition in real life situations to meet nutritional needs of the individuals, family and society. The learners will research using the internet and other sources the basic concepts of Food and Nutrition and discuss how they will apply the concept in their daily activities. • Present your findings for a whole class discussion. Example: i. Food is anything solid or liquid, raw or cooked, which when taken into the body promotes growth, provides heat and energy and regulates body processes. ii. Nutrients are chemical substances, which provide nourishment essential for the maintenance of life and for growth. Nutrition is the study of nutrients in food, how the body uses them and the relationship between diet, health and disease. iii. Digestion is the process of breaking down food into substances the body can use for energy, tissue growth and repair, etc. iv. Metabolism is the sum total of the processes or chemical changes that take place in living cells, etc.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**

	1.1.1.LI.2	1.1.1.AS.2
	Classify food commodities under the various food groups to enhance food selection and utilisation. **Collaborative Learning/Group Work Approaches:** In mixed ability/gender groups, use talking point/panel discussion, review food commodities and the three functional groups learnt in JHS. Example: i. Body building food ii. Energy giving food iii. Protective food **Structuring Talk for Learning Approaches:** With the aid of chart or realia of the Ghanaian six food groups, discuss their sources, functions and nutritional values. Example: i. Animal and animal products: Meat, eggs, game, fish and milk ii. Cereals and grains: Millet, rice, maize and fonio iii. Fruits and vegetables - mango, alefu, orange, cabbage, green pepper, banana and pawpaw iv. Fats and oils - margarine, shea butter, lard and groundnut oil v. Starchy roots and plantain - yam, cassava, plantain, cocoyam and sweet potato vi. Beans, nuts and oily seeds - bean, soya beans, groundnut, agushi and neri, etc. **Group Work**: In mixed ability groups, discuss the uses, nutritive value, importance and effects of heat on the nutritional content of a given food commodity and present in class. **Experiential Learning:** • Individually/in pairs draw and label the Ghanaian six-food group chart and illustrate how it can be used to support individuals and family's food selection and utilisation. • Paste the work for gallery walk.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	1.1.1.LI.3	1.1.1.AS.3
	Analyse ways convenience foods can be processed and used to promote healthy nutritional practice in households. **Experiential Learning:** Individually/in pairs visit a local market in your community or watch a video to identify the types of convenience food that are available for household purchases. Example: Convenience foods are pre-prepared or partially prepared food products that reduce the time and effort needed for meal preparation. They come in various forms and are designed to meet the needs of busy households. The main types of convenience foods include: i. Ready-to-Eat Foods ii. Ready-to-Cook Foods iii. Ready-to-Heat Foods iv. Baking and Dessert Mixes Conduct interviews to find out how the convenience foods are processed and used in meal preparation and service. Example: Convenience foods are processed using different methods to enhance preservation, taste and usability. Some common processing techniques include: i. Freezing ii. Canning iii. Dehydration (Drying) iv. Pasteurization v. Precooking and Packaging, etc. **Talk for Learning/Group Work:** In groups discuss your findings from the market or video and present your report for a whole class discussion using different presentation modes. **Collaborative Learning/Group Work Approaches:** In mixed ability/gender/friendly groups, use talking point/panel discussion, analyse ways convenience foods can be processed and used to promote healthy nutritional practice in households and present report in class. Example: Uses of convenience foods in meal Preparation	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**

	i. Ready-to-eat meals ii. Ingredients in cooking iii. Side dishes or accompaniments iv. Quick desserts and baking v. On-the-go meals and snacks, etc. Service of convenience foods • Plating and presentation: Convenience foods can be enhanced with fresh garnishes for better appeal. • Combination with fresh ingredients: Many convenience foods are best served with fresh items like herbs, fruits or vegetables to improve nutrition. • Reheating and serving: Proper heating methods such as microwaving, baking or stovetop warming ensure food is served at the right temperature, etc.	
	1.1.1.LI.4	1.1.1.AS.4
	Analyse the effect of heat on the nutritional values of the various food commodities. **Talk for Learning Approaches**: Use the KWL approach, brain-write and share what you know and what you want to know about the effect of heat on the nutritional values of the various food commodities. **Group Work and Collaborative Learning approaches:** In mixed ability/gender/cultural groups conduct an experiment to analyse the effect of heat on the nutritional value of food commodities. Example: i. Pectin in fruits are released for setting of jams ii. Vitamins in fruits and vegetables are destroyed iii. Protein denatures (shrinks, coagulate) iv. Carbohydrate gelatinizes (with moist heat) and dextrinizes (with dry heat) v. Minerals are leached through high heat cooking methods e.g. boiling vi. Sugar – melt-caramelize- treacle- carbon etc.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**

	Group Work and Collaborative Learning approaches: In mixed ability/gender/cultural groups present findings on the experiment on the effect of heat on the nutritional values on food commodities.		
Teaching and Learning Materials	• Charts/pictures/posters of food • Sticky notes • Relia food • Internet	• Smart (phone if possible) • Cameras • Computers • Projectors	• Flip charts • Charts/pictures/posters on food habits • Video, etc.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century Skills and GESI	Assessment
1.1.1.CS2	1.1.1.LI 1	1.1.1.AS.1
Demonstrate Scientific knowledge of food nutrients and their implication to growth and development among individuals, families and the community.	**Identify food nutrients and their effects on growth and development in the body.** **Talk for Learning Approaches**: Use the KWL approach, brain-write to identify food nutrients found in foods. **Group Work and Collaborative Learning approaches:** In mixed ability/gender/cultural groups use mingling/onion ring/pyramid discuss the functions of food nutrients in human growth and development.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
	1.1.1.LI.2	1.1.1.AS.2
	Discuss the effects of nutrient deficiencies on growth and development of the individual, family and society. **Talk for Learning Approaches:** In pairs/groups, use think-pair-share to discuss the food sources of food nutrients **Group Work and Collaborative Learning Approaches**: • In mixed ability groups, learners discuss deficiencies of food nutrients. • Present your findings for a whole class discussion. Example: Nutrient deficiencies occur when the body does not get enough essential nutrients, leading to various health issues such as: i. Protein Deficiency: Kwashiorkor and Marasmus ii. Carbohydrate Deficiency: Hypoglycemia iii. Fat Deficiency: Essential fatty acid deficiency iv. Vitamin Deficiencies: Night blindness, Beriberi, Scurvy, Rickets v. Mineral Deficiencies: Anemia, Osteoporosis, Goiter and Growth and Muscle cramps. etc.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
Teaching and Learning Materials	• Charts/pictures/posters of food • Sticky notes • Relia food • Internet	• Smart (phone if possible) • Cameras • Computers • Projectors	• Flip charts • Charts/pictures/posters on food habits • Video, etc.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century Skills and GESI	Assessment
1.1.1.CS. 3	1.1.1.LI. 1	1.1.1.AS.1
Demonstrate Scientific knowledge in food habit/lifestyles and its implications on growth and development on individuals and families.	**Discuss food habits/ lifestyles and their implications on the nutritional status of individuals, families and societies.** **Talk for Learning Approaches**: Use the KWL approach, brain-write and share what you know and what you want to know about the factors that influence food habits and lifestyles. **Group Work and Collaborative Learning approaches:** In mixed ability/gender/cultural groups use mingling/onion ring/pyramid, explore the meaning of food habits and lifestyles and share in groups. Example: i. Food habits refer to how and why individuals eat, which food they eat, and with whom they eat, as well as the ways individuals obtain, prepare serve, store, and discard food. ii. Lifestyle is a typical way of life of an individual, group or culture, which reflects their attitudes and values. **Group Work and Collaborative Learning approaches:** In mixed ability/gender/cultural groups use mingling/onion ring/pyramid, discuss food habits and lifestyles and their implications on the following: 1. Individual 2. Family 3. Society 4. Nation Example: **Good food habits:** i. Eat on time and regularly. ii. Reduce salt, sugar, fats and oil intake. iii. Eat more vegetables and fruits. iv. Eat balanced meals. v. Drink about two to three litres of water daily, etc.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning**:**

	Implications of good food habits i. Good health. ii. Reduces financial burden. iii. Improves good interpersonal relations. iv. Poor food habits, etc. **Bad eating habits:** i. Eating too much fat, sugars, salt, red meat and processed food. ii. Skipping meals. iii. Food fads. iv. Excessive alcohol intake. v. Snacking/eating between meals. vi. Eating late at night, etc. **Implications of poor food habits:** Food habit related diseases: i. Diabetes ii. Heart attack iii. Overweight/obesity, etc.	
	1.1.1.LI. 2	1.1.1.AS.2
	Analyse factors that influence food habits/ lifestyle practices in daily nutrition. **Group Work/Collaborative Learning Approach:** • In mixed ability/gender/cultural/friendship groups, identify factors that influence food habits/lifestyles. • In groups, use pyramid discussion to analyse and present the factors that influence food habits/lifestyle. • Present findings for a whole class discussion using different forms of presentation to present work. Example: Factors that influence food habits/lifestyle i. Geographical location ii. Culture/Ethnicity iii. Technology iv. Religion v. Education vi. Income/ economic status vii. Health status, etc.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning**:**

	Talk for Learning Approaches: Brain-write and share learning experience to complete the KWL by stating what they learnt in the lesson in plenary session.		
Teaching and Learning Materials	• Charts/pictures/posters of food • Sticky notes • Relia food • Internet	• Smart (phone if possible) • Cameras • Computers • Projectors	• Flip charts • Charts/pictures/posters on food habits • Video, etc.

Subject FOOD AND NUTRITION
Strand 1. NUTRITION AND HEALTH
Sub-Strand 2. FOOD SECURITY

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
1.1.2.LO.1		
Apply knowledge and understanding of basic food security concepts and their components to promote sustainable access to safe and nutritious food in everyday living.	**Communication and Collaboration skills:** • Ability to express ideas during sharing of experiences and group work. • Share ideas in group orally and in written. • Ability to express ideas during pair and group work. **Metacognition:** Thinking deeply and learning on their own about the basic food security concept in everyday living. **Personal development and Leadership skills:** • Able to articulate and explain one's feelings in a group situation and working with others. • Take leading roles in group work. **Cultural identity and global citizenship:** Ability to understand and apply knowledge on the basic food security concept in everyday living. **Critical and analytical thinking skills**: Develop imagination, research and questioning skills on basic food security concept in everyday living. **Digital literacy**: • Ability to use ICT tools to search and discuss issues of food security concept. • Can use ICT tools to surf for information.	**GESI:** Learners having experienced a teaching approach that ensures gender equality and social inclusion, where they work with each other in an inclusive way; cross-sharing knowledge and understanding among groups and individuals lead them to: • Embrace diversity and practice inclusion. • Respect individuals of different backgrounds. Interrogate their stereotypes and biases about the role men, women and people with special needs play in understanding basic food security concept in everyday living. **SEL:** Learners having been given the opportunity to experience varied teaching approaches in an enabling environment will be equipped with social emotional learning skills to: • Expand their emotional vocabulary and their abilities to identify ethical ways of understanding basic food security concept in everyday living. • Demonstrate respect for diversity among their groups and find ways for learners to share Cultural backgrounds and experiences with respect to basic food security concept in everyday living.

		• Offer a range of strategies to manage work in a team. **National Values**: • Tolerance, • Friendliness, open-Mindedness • Patience • Hard work • Humility
1.1.2.LO2		
Analyse ways of applying scientific knowledge and principles of food spoilage and food storage to prevent food deterioration and ensure food safety for healthy living.	**Communication and Collaboration skills:** • Ability to express ideas during sharing of experiences and group work. • Share ideas in group orally and in written. • Ability to express ideas during pair and group work. **Metacognition:** Thinking deeply and learning on their own about ways of applying scientific knowledge and skills to prevent food spoilage, ensure proper food storage and food safety to promote healthy living. **Personal development and Leadership skills:** • Able to articulate and explain one's feelings in a group situation and working with others. • Take leading roles in group work. **Cultural identity and global citizenship:** Ability to understand and apply knowledge on the ways of applying scientific knowledge and skills to prevent food spoilage, ensure proper food storage and food safety to promote healthy living.	**GESI:** Learners having experienced a teaching approach that ensures gender equality and social inclusion, where they work with each other in an inclusive way; cross-sharing knowledge and understanding among groups and individuals lead them to: • Embrace diversity and practice inclusion. • Respect individuals of different backgrounds. • Interrogate their stereotypes and biases about the role men, women and people with special needs play in understanding ways of applying scientific knowledge and skills to prevent food spoilage, ensure proper food storage and food safety to promote healthy living. **SEL:** Learners having been given the opportunity to experience varied teaching approaches in an enabling environment will be equipped with social emotional learning skills to: • Expand their emotional vocabulary and their abilities to identify ethical ways of

	Critical and analytical thinking skills: Develop imagination, research and questioning skills on ways of applying scientific knowledge and skills to prevent food spoilage, ensure proper food storage and food safety to promote healthy living. **Digital literacy**: ● Ability to use ICT tools to search and discuss ways of applying scientific knowledge and skills to prevent food spoilage, ensure proper food storage and food safety to promote healthy living. ● Can use ICT tools to surf for information.	understanding basic ways of applying scientific knowledge and skills to prevent food spoilage to ensure proper food storage and food safety to promote healthy living. • Demonstrate respect for diversity among their groups and find ways for learners to share their Cultural backgrounds and experiences with respect to ways of applying scientific knowledge and skills to prevent food spoilage, ensure proper food storage and food safety to promote healthy living. • Offer a range of strategies to manage work in a team. **National Values**: • Tolerance • Friendliness • Open-mindedness • Patience • Hard work • Humility

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century Skills and GESI	Assessment
1.1.2.CS.1	1.1.2.LI. 1	1.1.2.AS.1
Demonstrate knowledge and understanding of how to apply the concepts of food security and its components to ensure sustainable access to nutritious food in everyday living.	**Explain the concept of food security and the implication of its components in everyday living.** **Group work/Collaborative Learning**: In friendship/mixed ability/buzz groups, brainstorm to explain the basic concept of food security in everyday living. Example: Definition of food security: Food Security is the process where people at the same time have physical, social, psychological and economic access to adequate, safe and healthy foods to meet nutritional needs for an active life. **Group work**: • With a pyramid group/concept map/spider web, discuss the key components of food security. Surf the internet for further information on key components on food security. Example: i. Availability and affordability ii. Accessibility, quality and safety iii. Utilisation and diversity iv. Stability and sustainable practices, etc. • Share group report in plenary session for peer-review.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
	1.1.2.LI.2	1.1.2.AS.2
	Analyse the factors influencing food security at the household and national levels. **Group work/Collaborative Learning**: • In friendship/mixed ability/buzz groups, brainstorm to explain the challenges of food security in everyday life. • In your groups, analyse factors that influence food security and classify them under the following sub-headings: 1. Socio-economic	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	2. Environmental 3. Political factors influencing food security, etc. Example: a. Socio-Economic Factors: i. Poverty and income levels ii. Unemployment iii. Education and awareness iv. Infrastructure and market access v. Population growth and urbanisation, etc. b. Environmental Factors: i. Climate change and extreme weather events ii. Soil degradation and desertification iii. Water scarcity iv. Loss of biodiversity, etc. c. Political Factors i. Government policies and agricultural support ii. Conflict and political instability iii. Trade policies and globalisation iv. Land ownership and land use policies, etc. **Group Work**: • With a pyramid group/concept map/spider web, explain challenges of food security among individuals, households and communities in everyday life. Example a. Individual Level: i. Low income and unemployment. ii. Health conditions and disabilities. iii. Lack of food knowledge and awareness, etc. b. Household Level: i. Financial constraints. ii. Poor food storage and waste, iii. Family size and dependents, iv. Gender inequality in food access, etc.	

	c. Community Level i. Climate change and natural disasters, ii. Poor infrastructure and market access, iii. Political instability and conflicts, iv. Urbanisation and land use changes, v. Lack of Government Support and Policies, etc. • Share group report in plenary session for peer-review.		
Teaching and Learning Materials	• Charts/pictures/posters on spoiled foods • Sticky notes • Realia of food • Internet	• Smart phones (if possible) • Video • Camera • Computers	• Projectors • Flip charts, • Charts/pictures/posters on food storage • Storage containers, etc.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century Skills and GESI	Assessment
1.1.2.CS.2	1.1.2.LI.1	1.1.2.AS.1
Demonstrate knowledge and understanding of applying food storage principles to prevent food spoilage and promote food safety practices for healthy living.	**Explain the concept and principles of food storage and their role in preventing food spoilage.** **Structured Talk for Learning**: In mixed ability/gender/cultural groups use mingling/onion ring/pyramid, 1. Brainstorm to share lessons learnt on the concept of food storage in Career Technology in JHS. 2. Share experiences on how various foods are stored in your homes. 3. Based on experiences shared, explain the term food storage. 4. With the aid of pictures/realia/videos, discuss how to store both perishable and non-perishable food appropriately. Example: Food storage: Keeping food at appropriate temperatures/commodities and places to prolong shelf life. a. Non-perishable: i. Dry beans – sack ii. Flour – tight fitting containers iii. Maize – sacks or containers iv. Rice – sacks or containers v. Onion – basket, etc. b. Perishable: i. Meat – fridge/freezer ii. Fish – fridge/freezer iii. Vegetables – fridge iv. Yam – bury in soil v. Cassava – airy racks and barns, etc. **Group Work:** Use think-pair- share, explore the importance of storing food. Example: i. Prolong the life span of food. ii. To ensure food security. iii. Help to preserve quality and nutritional value to save money. Help prevent foodborne illness, etc.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	Experiential Learning: In friendship and cultural groups examine how individuals and families can apply food storage principles to prevent food spoilage and promote food safety practice for healthy living Example: a. Food storage can be categorised into: i. Dry storage: Storing non-perishable items like grains, flour, and canned foods at room temperature. ii. Refrigerated storage: Keeping perishable foods like dairy, fruits, and vegetables in refrigerators at temperatures below 5°C. iii. Frozen storage: Storing highly perishable foods like meat, poultry, and seafood at freezing temperatures (-18°C or below) etc. b. Impact of food storage on food safety i. Prevention of food spoilage ii. Reduction of foodborne illnesses iii. Minimisation of cross-contamination iv. Preservation of Nutritional Value v. Reduction of food waste and economic loss, etc. c. Best practices for safe food storage. i. Store dry foods in airtight containers to prevent moisture and pest infestation. ii. Keep perishable foods refrigerated or frozen at appropriate temperatures. iii. Label food items with dates to track expiration and freshness. iv. Use the FIFO (First In, First Out) method to prevent older food from expiring. v. Avoid overloading refrigerators and freezers to allow proper air circulation	
	1.1.2.LI.12	
	Discuss the causes of food spoilage and its implication for food safety. **Structured Talk for Learning**: In mixed ability groups, discuss the definition of food spoilage with the aid of realia, videos, pictures, samples of spoiled food. **Group Work**: Present findings for whole class discussion. Example: Food spoilage refers to the deterioration of food quality due to biological, chemical, or physical factors, making it unsafe or undesirable for consumption. Spoiled food can lead to foodborne illnesses, economic losses and wastage, affecting both households and the food industry.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	Example a. Causes of Food Spoilage i. Microbial spoilage: Bacteria, mold and fungal contamination as well as yeast fermentation ii. Enzymatic activity: Ripening and over-ripening and browning reactions. iii. Chemical Reactions: Oxidation and Rancidity iv. Physical Factors: Temperature, moisture and improper handling can cause food spoilage, etc. b. Implications of Food Spoilage on Food Safety i. Health risks and foodborne diseases ii. Economic losses and food waste iii. Environmental impact iv. Preventive measures to reduce food spoilage, etc.		
	1.1.2.LI.3		1.1.2.AS 3
	Demonstrate appropriate food handling, storage and hygiene practices to minimise contamination and ensure food safety. **Experiential /Group Work**: • Watch a demonstration/video on how to store food commodities. • In mixed ability groups with food samples, simulate or demonstrate how to store food commodities. Example: i. Fish ii. Onion iii. Mango iv. Banana v. Beans vi. Rice, etc. *Note: Teacher goes round to guide learners.* • Display stored food commodities in various groups for gallery walk and appraisa*l.*		Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
Teaching and Learning Materials	• Charts/pictures/posters on spoiled foods • Sticky notes • Realia of food • Internet	• Smart phones (if possible) • Video • Camera • Computers	• Projectors • Flip charts, • Charts/pictures/posters on food storage • Storage containers, etc.

Subject FOOD AND NUTRITION
Strand 2. FOOD PRODUCTION
Sub-Strand 1. FOOD PRODUCTION TECHNOLOGY

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
1.2.1.LO1		
Assess the types, functions and layout of food laboratories used in food production and their role in ensuring efficiency and safety.	**Communication and Collaboration skills:** • Ability to express ideas during group work and sharing experiences • Share ideas in group orally and in written. • Ability to express ideas during pair and group work. **Metacognition:** Thinking deeply and learning on their own about the types and fuel use in food laboratories in food production. **Personal development and Leadership skills:** • Able to articulate and explain one's feelings in a group situation and working with others. • Take leading roles in group work. **Cultural identity and global citizenship:** Ability to understand and apply knowledge on the types of food laboratories/fuel use in food production. **Critical and analytical thinking skills**: Develop imagination, research and questioning skills on the types of food laboratory/fuel use in food production.	**GESI:** Learners having experienced a teaching approach that ensures gender equality and social inclusion, where they work with each other in an inclusive way; cross-sharing knowledge and understanding among groups and individuals lead them to: • Embrace diversity and practice inclusion. • Respect individuals of different backgrounds. • Interrogate their stereotypes and biases about the role men, women and people with special needs play in understanding the types of food laboratory/fuel use in food production. **SEL:** Learners having been given the opportunity to experience varied teaching approaches in an enabling environment will be equipped with social emotional learning skills to: • Expand their emotional vocabulary and their abilities to identify ethical ways of understanding the types of

	Digital literacy: • Ability to use ICT tools to search and discuss the types of food laboratory/fuel use in food production • Use ICT tools to surf for information.	food laboratory/fuel use in food production. • Demonstrate respect for diversity among their groups and find ways for learners to share their Cultural backgrounds and experiences with respect to the types of food laboratory/fuel use in food production • Offer a range of strategies to manage work in a team. **National Values:** • Tolerance • Friendliness • Open mindedness • Patience • Hard work • Humility
1.2.1.LO.2		
Plan and design a food laboratory layout to promote safety and the effective use of food laboratory equipment and tools.	**Critical Thinking/Analytical Skills**: • Ability to analyse, make judgments and draw conclusions on the differences and similarities of food laboratories. • Ability to imagine and plan food laboratory for use in the home. • Ability to evaluate the factors that affect food laboratory planning. • Ability to explore and design ideal food laboratories to make them user friendly. • Ability to think critically and find solutions to problems.	**GESI:** Learners having experienced a teaching approach that ensures gender equality and social inclusion, where they work with each other in an inclusive way; cross-sharing knowledge and understanding among groups and individuals lead them to: • Accept individual opinions and ideas about the design of food laboratory layout. • Respect individuals of different backgrounds and embrace inclusion.

	Digital literacy: Ability to use ICT tools to surf the internet for information about food laboratory layout and present in class. **Communication and Collaboration skills**: • Ability to express ideas during pair and group work. • Ability to share ideas in group discussion and speak clearly in a group. **Creativity and Innovation**: Ability to use new ideas to design and create new/novel designs. **Personal Development and Leadership skills:** Take leading roles in group work.	**SEL:** Learners having been given the opportunity to experience varied teaching approaches in an enabling environment will be equipped with social emotional learning skills to: • Take a leading role in decision-making in relation to kitchen layout. • Offer learners' choices about ways they can present their ideas. • Respect diversity among learners and find ways for learners to share their cultural backgrounds and experiences. • Listen to their peers' opinions and express disagreements in constructive ways. **National Core Values**: • Tolerance • Friendliness • Open mindedness • Patience • Hard work • Humility

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century Skills and GESI	Assessment
1.2.1.CS.1	1.2.1.LI.1	1.2.1.AS.1
Demonstrate knowledge and understanding of the types, functions and layout of food laboratories used in food production.	**Discuss the concept of food laboratories and their functions in food production.** **Group Work:** In small groups or whole class, brainstorm on the concept of food laboratories. Example: Food laboratories are a place where food is stored, prepared, cooked and served, cleaning is done, and equipment is stored. They are also the most important area in the home. The types of food laboratories include: i. Kitchen laboratories ii. Microbiological laboratories iii. Chemical analysis laboratories iv. Nutritional analysis laboratories v. Sensory evaluation laboratories, etc. **Structured Talk for Learning**: With the aid of videos and pictures, discuss the functions of food laboratories. Example: i. food safety ii. quality control iii. product development and research iv. sensory evaluation v. shelf- life determination, etc.	Level 1 Recall **Level 2 Skills of conceptual understanding** Level 3 Strategic reasoning Level 4 Extended critical thinking and reasoning
	1.2.1.LI.2	1.2.1.AS.2
	Discuss the types of kitchen laboratories layout and their implication in food production. **Group Work:** In small groups or whole class, brainstorm the differences and similarities of kitchen laboratories. **Structured talk for learning**: With the aid of videos and pictures, compare the types of kitchen laboratories bringing out the similarities, differences, advantages and disadvantages of each.	**Level 1 Recall** **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	Example: Similarities and differences of kitchen laboratories/ types of tools and equipment used in the kitchen laboratories. Example: Kitchen laboratories: it is the dedicated space or room in a home, restaurants, hotels 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. **Structured talk for learning**: With the aid of videos and pictures, discuss the types of kitchen laboratories and their functions. Example: a. Types of kitchen laboratory i. Family kitchen laboratory ii. Educational kitchen laboratory iii. Research and development kitchen laboratory iv. Commercial kitchen laboratory v. Experimental/test kitchen laboratory vi. Hospital and clinical kitchen laboratory vii. Food processing and preservation laboratory b. Functions of family kitchen laboratory: i. Foods are cooked and served in the kitchen laboratory. ii. Visitors are received and sometime entertained in the kitchen laboratory. iii. Storage area for food tools and equipment. iv. Family meetings may be held in the kitchen laboratory. v. Laundering activities can go on in the kitchen laboratory, etc. c. Kitchen laboratory layouts: There are several types of kitchen laboratory layouts, each of them is designed to suit specific needs and space availability such as: i. Single-Line (Straight-Line) Layout ii. L-Shaped Layout iii. U-Shaped Layout iv. Island Layout v. Parallel (Galley) Layout, etc d. Implications of kitchen layouts on food production i. Workflow and Efficiency	

ii. Safety and Hygiene
iii. Space Utilisation
iv. Collaboration and Teaching, etc.

Collaborative Learning and Group Work: In random/mixed cultural groups, use the "build on what others say" or the debating strategy to compare modern and traditional kitchen laboratories that are available to individual, families and institutions in the Ghanaian and global context. Present a report at plenary
Example: The transition from traditional to modern kitchen laboratories in Ghana and globally reflects advancements in technology, food safety and environmental sustainability. While traditional kitchens maintain cultural significance and resourcefulness, modern kitchens emphasize efficiency, safety and innovation:

i. Infrastructure and design
ii. Cooking equipment and technology
iii. Safety and hygiene standards
iv. Accessibility and affordability
v. Application in institutions, etc.

Similarities	Differences
• Uses fuel • Use tools and equipment	• Modern food laboratories are well organised. • Modern food laboratories use sophisticated equipment.

Example:
a. Traditional kitchen laboratory
Advantages

i. Simple to construct.
ii. It is easy to purchase the tools and equipment.

Disadvantages

i. Inadequate storage space.
ii. Poor ventilation.
iii. Walls become dirty due to smoke.

	b. Modern kitchen laboratory Advantage i. Use advanced equipment and tools ii. Well organised equipment Disadvantages i. Expensive to buy tools and equipment ii. Complexity in maintenance of tools and equipment **Group Work:** • Use think-pair- share, explore the types of fuel used in the food laboratory. Example: LPG – GAS, Kerosene, Charcoal, Electricity • Present findings in groups for discussion.		
Teaching and Learning Materials	• Flip charts • Charts/pictures/posters on food habits • Sticky notes • Realia of food	• Internet • Smart phones (if possible) • Cameras • Computers	• Projectors • Videos of types of food laboratories Charts/pictures/posters of food laboratories, etc.

<table>
<tr><th>Content Standards</th><th>Learning Indicators and Pedagogical Exemplars with 21st Century Skills and GESI</th><th>Assessment</th></tr>
<tr><td>1.2.1.CS.2</td><td>1.2.1.LI.1</td><td>1.2.1.AS.1</td></tr>
<tr><td>Demonstrate knowledge and understanding in innovative ways of planning and using food laboratories.</td><td>Evaluate the factors that affect the planning and layout of food laboratories.

Group Work: In pairs, discuss the factors that affect food laboratory planning and factors to consider when planning food laboratories for family use.
Example:
a. Factors that affect food laboratory planning.
i. Purpose and scope
ii. Building infrastructure
iii. Equipment selection
iv. Space and layout
v. Safety and security, etc.
b. Factors to consider when planning food laboratories for family use.

<table><tr><th>Socio-Cultural Factors</th><th>Economic Factors</th></tr><tr><td>Family needs</td><td>Family budget</td></tr><tr><td>Fuel</td><td>Size and shape of the food laboratory</td></tr><tr><td>Position of doors and windows</td><td>Equipment and tools</td></tr><tr><td>Functions of the food laboratory</td><td>Care and maintenance of the food laboratory</td></tr><tr><td>Environment</td><td></td></tr></table>
Group Work/Collaboration: In mixed ability groups, evaluate the factors that affect food laboratory planning and present reports for feedback.</td><td>Level 1 Recall
Level 2 Skills of conceptual understanding
Level 3 Strategic reasoning
Level 4 Extended critical thinking and reasoning</td></tr>
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	1.2.1.LI.2	1.2.1.AS.2
	Suggest ways of re-designing/ renovation/refurbishment of a food laboratory to enhance the functions of various areas within the laboratory. **Group Work/Collaboration:** In mixed ability/gender/friendship groups, suggest ways of re-designing local kitchen laboratories to make them user friendly. Example: The goal of redesigning/renovation/refurbishment of the food laboratory is to create a modern, efficient and safe space that complies with industry standards and regulations: i. Changing layout and flow ii. Budgeting and planning iii. Flooring and wall iv. Lighting, etc. Reasons for re – designing the food laboratory**:** Re-designing the 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: **i.** Promote safety and hygiene **ii.** Promote efficiency and productivity **iii.** Ensure compliance and adaptability to changing needs **iv.** Promote comfort of use **v.** Easy care and maintenance, etc. **Group Work:** In groups, design your dream or ideal food laboratory to enhance the functionality and safety of the zones and layout in the kitchen laboratory. **Experiential/Collaborative Learning**: Undertake a field trip in the community to observe the layout and describe the importance of maintaining cleanliness and order in different food laboratories and report.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**
	1.2.1.LI.3	1.2.1.AS.3
	Discuss ways of ensuring hygiene in the food laboratory. **Talk for Learning:** In pairs, brain-write/through question and answer/talking point, review lesson on food hygiene learnt in JHS- Career Technology and share.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning**

	Structured Talk for Learning: In pairs/smaller groups/whole class, explain hygiene in food laboratories and present in class. E.g., hygiene is the maintenance of the general cleanliness of the food laboratory (Personal hygiene, food hygiene and environmental hygiene) **Group work: in mixed ability groups discuss** how to maintain good hygiene in food laboratories E.g., **Environmental hygiene** • Clean the sink thoroughly • Regularly empty dustbins • Regularly clean work surfaces **Food hygiene** • Cover foods • Wash hands before touching foods • Use clean tools and equipment for cooking, etc. **Personal hygiene** • Bath regularly • Wear clean clothes and aprons • Trim fingers and toenails • Brush teeth twice daily		Level 4 Extended critical thinking and reasoning
Teaching and Learning Materials	• Flip charts • Charts/pictures/posters on food habits • Sticky notes • Realia of food	• Internet • Smart phones (if possible) • Cameras • Computers	• Projectors • Videos of types of food laboratories • Charts/pictures/posters of food laboratories, etc.

Subject FOOD AND NUTRITION
Strand 2. FOOD PRODUCTION
Sub-Strand 2. FOOD PROCESSING TECHNIQUES

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
1.2.2.LO1		
Apply scientific principles in food processing techniques to produce nutritious beverages.	**Communication and collaboration skills:** • Share their ideas with peers. • Accept constructive feedback. • Self-directed learning- take initiative for own learning. • Contribute meaningfully to discussions. • Ask probing and relevant questions to check and build understanding. • Speak clearly and convey simple answers or thoughts to a wider group in a group discussion. **Digital literacy:** Use computers and phones to surf the internet for information and present beverages in the food laboratory for discussion. **Creativity and innovation:** Ability to exhibit new or ingenious ideas to produce nutritious beverages. **Personal development and Leadership skills:** Ability to steer group affairs, take initiatives and make decisions to produce nutritious beverages for healthy living. **Planning skills:** Plan nutritious beverages for specific occasions.	**GESI:** Learners having experienced a teaching approach that ensures gender equality and social inclusion, where they work with each other in an inclusive way; cross-sharing knowledge and understanding among groups and individuals lead them to: • Respect individuals of different backgrounds to produce nutritious beverages. • Embrace diversity and practice inclusion in production beverage for healthy living. • Examine and dispel misconceptions/myths to produce nutritious beverages to ensure healthy living. • Interrogate their stereotypes and biases about beverage production. **SEL:** Learners having been given the opportunity to experience varied teaching approaches in an enabling environment will be equipped with social emotional learning skills to: • Produce nutritious beverages for healthy living.

		• Demonstrate respect for diversity among learners and find ways for learners to share their cultural backgrounds and experiences with regards to producing nutritious beverages. • Offer opportunities to set goals and work to achieve them. **National Values:** • Tolerance • Friendliness • Open mindedness • Patience • Hard work • Humility
1.2.2.LO.2		
Apply knowledge of nutrition to enrich and fortify beverages for improved health benefits.	**Communication and Collaboration skills:** Express ideas during pair and group work. **Metacognition:** Ability to think deeply and work independently and have constructive reflection. **Digital literacy**: Ability to use ICT tools to surf the internet for information about how to enrich and fortify beverages and present it in class. **Personal development and Leadership skills**: Taking leading roles in group work. **Critical thinking and problem solving**: ● Ability to think critically and generate new ideas to enrich and fortify beverages for use in society.	**GESI:** Learners having experienced a teaching approach that ensures gender equality and social inclusion, where they work with each other in an inclusive way; cross-sharing knowledge and understanding among groups and individuals lead them to: • Be sensitive to the combination of ingredients in the fortification of beverages. • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. **SEL:** Learners having been given the opportunity to experience varied teaching approaches in an enabling environment will

	• Ability to create new products using local ingredients. **Communication/ Presentation skills:** Ability to share ideas among groups and present reports in class with confidence.	be equipped with social emotional learning skills to: • Identify potential situations or experiences that lead to feeling overwhelmed and struggling to manage emotions with respect to food experimentation. • Evaluate their own work. • Listen to their peers' opinions and express disagreements in constructive ways. • Managing their thoughts and behaviours. **National Values** • Tolerance • Friendliness • Open mindedness • Patience • Hard work • Humility

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century Skills and GESI	Assessment
1.2.2.CS.1	1.2.2.LI.1	1.2.2.AS.1
Demonstrate knowledge, understanding, and skills in applying scientific principles to beverage production.	**Discuss the types of beverages and their uses** **Group work/Collaborative Learning**: • In friendship/mixed ability/buzz groups, brainstorm the meaning of beverages. • Surf the internet for types of beverages. Example: Beverage is a flavoured drink that is either refreshing, nourishing or stimulating. It can be sweetened or unsweetened. **Group work**: With a pyramid group/concept map/spider web, discuss the types of beverages and their uses. Example: a. Alcoholic beverages: they contain some amount of alcohol. i. soft – beer, wine, pito ii. hard liquor – gin, whisky, brandy b. Non-alcoholic beverages: they contain no alcohol. i. Stimulant – coffee, tea, ginger drink ii. Nourishing drinks – Zonkon (millet drink), milk drinks, cocoa drinks iii. Refreshing drinks - carbonated drinks, concentrate, fruit flavoured drinks, punches, vegetable drinks c. Uses of beverages i. Hydration ii. Quenching thirst iii. Nutrition iv. Energy boost v. Social enjoyment **Talk for Learning Approach:** • In a whole class discussion, use the snowball strategy to discuss factors that influence the selection and use of beverages for healthy living. 1. Nutritional content 2. Health condition 3. Sugar content	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	4. Environmental impact • Share the group report in a plenary session for peer-review	
	1.2.2.LI.2	1.2.2.AS.2
	Explain the scientific principles involved in the selection, processing, and preservation of beverages **Experiential Learning/Collaborative Learning**: • In mixed cultural/gender groups explain the scientific principles involved in the selection, processing, and preservation of beverages Example: a. General principles of beverage production: i. Quality ingredients: use fresh quality ingredients ii. Cleanliness: maintain cleanliness throughout the preparation iii. Safety: follow proper food safety guidelines iv. Measurement: accurate measurement ensures consistency v. Temperature control: monitor temperature for optimum extraction. b. Specific principles for making beverages: i. Tea: the principle is to develop flavor and to extract as little tannin as possible. ii. Coffee: to extract maximum amount of caffeine and flavouring and minimum amount of tannin iii. Cocoa: it contains starch and must be boiled to cook the starch. iv. Fruits: the principle is to maintain the water soluble vitamins. • Creativity and innovation: Ability to exhibit new ideas on the principles of beverage production	Level 1 Recall **Level 2 Skills of conceptual understanding** Level 3 Strategic reasoning Level 4 Extended critical thinking and reasoning

Teaching and Learning Materials	• Pictures or videos of clean food laboratories • Flip charts • Charts/pictures/posters on variety of beverages • Sticky notes • Realia of beverage products	• Internet • Smart phones (if possible) • Video • Cameras • Computers	• Projectors • Grains/Cereals/Fruits • Cooking equipment • Cooking ranges • Realia of enriched or fortified food, etc.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century Skills and GESI	Assessment
1.2.2.CS.2	1.2.2.LI.1	1.2.2.AS.1
Demonstrate knowledge and understanding of the principles of nutrition and apply them to produce, enrich and fortify beverages to meet the diverse needs of individuals, families and society.	**Analyse how to enrich or fortify beverages to meet the food, nutrition and social needs of individuals, families and society.** **Group Work/Collaborative Learning**: In friendship group/gender-based groups/random grouping, explain beverage enrichment/fortification, functions and present in class. Example: a. 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. i. Beverage production**:** 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. ii. Enrichment: Addition of specific nutrients or substances to a beverage to increase its nutritional value. iii. 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 b. Food substances used for beverage enrichment and fortification. The substances used for enrichment and fortification can vary based on the specific nutrients: i. Vitamins ii. Minerals iii. Proteins iv. Fibre v. Omega-3 Fatty Acids vi. Plant Extracts, etc. **Experiential Learning**: Watch videos/surf the internet/talk to friends on beverage enrichment or fortification.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

Group work: In pairs/mixed ability groups, discuss reasons for the enrichment and fortification of beverages and their nutritional/ safety implications for healthy living. Groups present their reports for the whole class discussion.
Example:
a. Functions of beverage enrichment and fortification
i. Nutrition and flavour enhancement
ii. Texture and mouth-feel improvement
iii. Shelf-life extension, etc.

b. Nutritional and safety implications

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

1.2.2.LI.2	1.2.2.AS.2
Conduct experiments to produce non-alcoholic beverages using local food commodities that meet the needs of individuals, families and society. **Experiential Learning**: Observe/watch video on how to prepare, enrich or fortify beverages using local ingredients. Example: Using sobolo leaves/ Hibiscus flower, prekese, turkey berry to enrich beverage etc **Experiential Learning/Group work**: • In smaller groups/ task group /Jigsaw with cross grouping/mixed ability groups, experiment and produce enriched/fortified local beverages (non - alcoholic)	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**

	• Learners display work for appraisal. Example: a. Pre preparation activities i. Ingredient sourcing cleaning and processing of raw materials ii. Preparation activities Mixing/blending Squeezing Pasteurisation/ Sterilisation (if applicable) iii. Filtration b. Post preparation activities i. Packaging ii. Cleaning and tidying up c. Process of producing, enriching and fortifying non-alcoholic beverages i. Selection of base/ main ingredients ii. Processing and preparation iii. Extraction iv. Blending and mixing v. Sweetening and flavouring vi. Enrichment and fortification vii. Filtration and clarification viii. Carbonation (for carbonated beverages), etc. **Group Work**: • Reflect and write a report on beverage enrichment and fortification • Encourage groups to choose different ways of presenting their work e.g., videos, power point, charts or written, etc.	
	1.2.2.LI.3	1.2.2.AS.3
	Evaluate how scientific principles influence alcoholic beverage production using local food commodities. **Experiential Learning**: Observe/watch video on how to prepare, enrich or fortify beverages using local ingredients. Surf the internet and other sources to identify the scientific principles that guide alcoholic beverage production. Example: Scientific principles play a very important role in the production of alcoholic beverages using local food commodities	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**

	Example: Using orange, pineapple, grapes, lemons, lime to enrich beverages, etc. a. Fermentation (Biochemical Principle) i. Microbial Activity ii. Raw Materials iii. Enzymatic Action b. Distillation (Physical and Chemical Principles) i. Boiling Point Differences ii. Fractional Distillation c. Quality and Safety Control (Microbiological & Chemical Principles) i. Pasteurization or Filtration ii. Ethanol Concentration Measurement iii. Toxin Reduction d. Flavour and Aroma Development (Biochemical and Sensory Science) i. Esters and Phenolics ii. Aging and Maturation e. Preservation and Shelf Life (Food Chemistry) i. pH Control ii. Natural Preservatives **Experiential Learning/Group work**: • In smaller groups/ task group /Jigsaw with cross grouping/mixed ability groups, apply the scientific principles to conduct experiments and produce enriched/fortified local alcoholic beverages. • Display your alcoholic beverages for appraisal. Example: **Steps:** The production of alcoholic beverages follows a structured process that involves fermentation, distillation (if applicable), and quality control. Below is a step-by-step guide: Step 1: Selection of Raw Materials • Choose local food commodities rich in fermentable sugars or starches, such as: • Cereal grains (sorghum, millet, maize, rice) • Tubers (cassava, yam, sweet potatoes) • Fruits (pineapple, banana, palm sap, grapes)	

	• Sugar-rich sources (honey, sugarcane, molasses) Step 2: Preparation of Raw Materials • Starchy grains and tuber • Clean and crush/mash to expose starches. • Malting (if applicable) • Cooking/Boiling • Add enzymes (e.g., amylase) Step 3: Fermentation (Alcohol Formation) • Add yeast (e.g., Saccharomyces cerevisiae) to the prepared sugar-rich mixture. • Control fermentation conditions: • Temperature: Maintain an optimal range (25-35°C) for yeast activity. • Oxygen restriction: Seal the fermentation vessel to promote anaerobic conditions, necessary for alcohol production. • Duration: Allow fermentation for 3–14 days, depending on the beverage type. • Chemical Reaction: Yeast converts sugars into ethanol and carbon dioxide: Step 4: Filtration and Clarification • After fermentation, filter the liquid to remove solid residues. • Let it settle or use filtration techniques to achieve a clear beverage. Step 5: Distillation (For Spirits and Strong Alcoholic Beverages) • Heat the fermented liquid in a distillation apparatus. • Collect ethanol vapors at around 78.37°C and condense them into liquid form. • Repeat distillation if higher alcohol concentration is required. Step 6: Maturation and Aging (If required) • Store the beverage in barrels, clay pots, or glass containers to enhance flavor and aroma. • Duration varies: • Local palm wines are consumed fresh. • Spirits and some wines require months to years of aging. Step 7: Packaging and Preservation • Bottle or store the beverage in sterilized containers. • Use preservatives (e.g., natural herbs or chemical stabilisers) if necessary. • Seal properly to prevent contamination. Step 8: Quality Testing and Serving • Check for alcohol content using a hydrometer or alcohol meter.	

	• Taste and adjust the beverage as needed before serving. Processes of Enrichment: • Addition of natural ingredients • Aging and maturation: • Fermentation control, etc. Process of fortification • Vitamin and mineral addition • Functional ingredient fortification • Incorporation of antioxidants from natural extracts to boost health benefits • Alcohol content adjustment • Use of herbal infusions, etc.		
Teaching and Learning Materials	• Pictures or videos of clean food laboratories • Flip charts • Charts/pictures/posters on variety of beverages • Sticky notes • Realia of beverage products	• Internet • Smart phones (if possible) • Video • Cameras • Computers	• Projectors • Grains/Cereals/Fruits • Cooking equipment • Cooking ranges • Realia of enriched or fortified food, etc.

YEAR TWO

Subject FOOD AND NUTRITION
Strand 1. NUTRITION AND HEALTH
Sub-Strand 1. FOOD FOR HEALTHY LIVING

Learning Outcomes	21st Century Skills and Competencies	GESI[3], SEL[4] and Shared National Values
2.1.1.LO.1		
Employ knowledge and understanding of the principles of nutrition and how different food groups contribute to healthy living in planning meals for special groups and other members of the family with special needs. .	**Communication and collaboration skills:** • Share their ideas with peers. • Accept constructive feedback. • Self-directed learning- take initiative for own learning. • Contribute meaningfully to discussions. • Ask probing and relevant questions to check and build understanding. • Speak clearly and convey simple answers or thoughts to a wider group in a group discussion. **Digital literacy:** Use computers and phones to surf the internet for information and present work in class for discussion. **Creativity and innovation:** Ability to exhibit new or ingenious ideas in food nutritional Interventions to support food related diseases among individuals, families and societies **Personal development and Leadership skills:** Ability to steer group affairs, take initiatives and explain food nutritional Interventions to support food related diseases among individuals, families and societies	**GESI:** Learners having experienced a teaching approach that ensures gender equality and social inclusion, where they work with each other in an inclusive way; cross-sharing knowledge and understanding among groups and individuals lead them to: • Respect individuals of different backgrounds in food nutritional Interventions. • Embrace diversity and practice inclusion in food nutritional Intervention's discussion • Examine the misconceptions/myths about food habits • Interrogate their stereotypes and biases about food habit related diseases among individuals, families and societies **SEL:** Learners having been given the opportunity to experience varied teaching approaches in an enabling environment will be equipped with social emotional learning skills to:

[3] Gender Equality and Social Inclusion
[4] Socio-Emotional Learning

	Planning skills: Discuss food nutritional Interventions to support food related diseases among individuals, families and societies **Resourcefulness:** Adapt presentations during delivery to better engage the audience.	• Plan meals to meet the needs of special people in the family and society. • Recognise commonalities and differences that exists among individuals, families and society. • Demonstrate respect for diversity among learners and find ways for learners to share their cultural backgrounds and experiences with food related diseases among individuals, families and societies • Offer opportunities to set goals and work to achieve them. • Reflect on positive and negative food habits. **National Values:** • Tolerance • Friendliness • Open mindedness • Patience • Hard work • Humility
2.1.1.LO.2		
Explore and evaluate food and nutritional interventions available for households and individuals suffering from food-related diseases.	**Communication and collaboration skills:** • Share their ideas with peers. • Accept constructive feedback. • Self-directed learning- take initiative for own learning. • Contribute meaningfully to discussions. • Ask probing and relevant questions to check and build understanding. • Speak clearly and convey simple answers or thoughts to a wider group in a group discussion.	**GESI:** Learners having experienced a teaching approach that ensures gender equality and social inclusion, where they work with each other in an inclusive way; cross-sharing knowledge and understanding among groups and individuals lead them to: • Respect individuals of different backgrounds in meal planning. • Embrace diversity and practice inclusion in planning meals for the family.

	Digital literacy: Use computers and phones to surf the internet for information and present work in class for discussion. **Creativity and innovation:** Ability to exhibit new or ingenious ideas in planning meals. **Personal development and Leadership skills:** Ability to steer group affairs, take initiatives and make decisions to plan meals for the special individuals in the family. **Planning skills:** Plan nutritious meals for various individuals in the family. **Resourcefulness:** Adapt presentations during delivery to better engage the audience.	• Examine and dispel misconceptions/myths about meal planning for individuals, families and people with special needs. • Interrogate their stereotypes and biases about meal planning for individuals, families and people with special needs. **SEL:** Learners having been given the opportunity to experience varied teaching approaches in an enabling environment will be equipped with social emotional learning skills to: • Plan meals to meet the needs of special people in the family and society. • Recognise commonalities and differences that exist among individuals, families and society. • Demonstrate respect for diversity among learners and find ways for learners to share their cultural backgrounds and experiences with regards to meal planning. • Offer opportunities to set goals and work to achieve them. • Reflect on positive and negative choices of food when planning. **National Values:** • Tolerance • Friendliness • Open mindedness • Patience • Hard work • Humility

2.1.1.LO.3		
Plan and prepare meals that promote the well-being of individuals, family members and special groups with diverse food nutritional needs using healthy cooking methods	**Critical thinking and problem solving:** Think rationally and clearly to plan and prepare meals suitable for the different groups of people in the family to meet their nutritional needs **Creativity, Innovation and Resourcefulness:** Creatively plan and prepare nutritious meals to promote good health. **Personal development and leadership skills:** Develop the habit of learning from others. Understand and respect the needs, perspectives, and actions of others (empathy).	**GESI:** Learners having experienced a teaching approach that ensures gender equality and social inclusion, where they work with each other in an inclusive way; cross-sharing knowledge and understanding among groups and individuals lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/myths about gender as they relate preparation, cooking and serving food. • Interrogate their stereotypes and biases about gender and people with special needs with • regards to cooking and serving food. **SEL:** Learners having been given the opportunity to experience varied teaching approaches in an enabling environment will be equipped with social emotional learning skills to: • Plan and prepare dishes for the special groups in the family. • Demonstrate respect for diversity among learners and find ways for learners to share their cultural backgrounds and experiences with regards to food preparation. • Evaluate own work and that of others. Use a range of options to complete work.

		National Values: • Tolerance • Friendliness • Open mindedness • Patience • Hard work • Humility
2.1.1.LO.4		
Demonstrate skills using appropriate methods of preparation, cooking and serving of meals for individuals and special groups in the family	**Critical thinking and problem solving:** • Think rationally and clearly to prepare, cook and serve meals suitable for the different groups of people in the family to meet their nutritional needs • Analyse and judge the best ways of setting tables and trays for different occasions. **Creativity, Innovation and Resourcefulness:** • Creatively cook and serve nutritious meals to promote good health. • Apply creativity in the use of tools and equipment in setting tray/table. **Personal development and leadership skills:** • Develop the habit of learning from others. Understand and respect the needs, perspectives, and actions of others (empathy).	**GESI:** Learners having experienced a teaching approach that ensures gender equality and social inclusion, where they work with each other in an inclusive way; cross-sharing knowledge and understanding among groups and individuals lead them to: • Respect individuals of different backgrounds. Embrace diversity and practice inclusion. • Examine and dispel misconceptions/myths about gender as they relate preparation, cooking and serving food. • Interrogate their stereotypes and biases about gender and people with special needs with regards to cooking and serving food. **SEL:** Learners having been given the opportunity to experience varied teaching approaches in an enabling environment will be equipped with social emotional learning skills to: • Prepare, cook and serve dishes for the special groups in the family.

		• Demonstrate respect for diversity among learners and find ways for learners to share their cultural backgrounds and experiences with regards to food preparation and serving. • Evaluate own work and that of others. Use a range of options to complete work. **National Values**: • Tolerance • Friendliness • Open mindedness • Patience • Hard work • Humility

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century Skills and GESI	Assessment
2.1.1.CS.1	2.1.1.LI.1	2.1.1.AS.1
Analyse the relationship between food choices and the overall health of individuals, family members and special groups.	**Explain the importance of consuming a balanced diet for maintaining good health.** **Collaborative Learning and Group Work:** In mixed gender and cultural groups: 1. Discuss the components of a balanced diet. 2. Use of food pyramids and charts to illustrate a balanced diet. Example: A balanced diet includes all these components in appropriate proportions to meet an individual's nutritional needs. A deficiency or excess of any component can lead to health complications. Emphasise the importance of consuming a variety of foods for overall well-being. i. Carbohydrates: The body breaks down carbohydrates into glucose, which fuels physical activities and brain functions. ii. Proteins: Essential for muscle development, healing wounds, and maintaining overall body strength. iii. Fats and Oils: Helps in insulation, hormone production, and maintaining healthy skin. However, excess consumption of unhealthy fats like saturated and trans fats can lead to heart diseases. iv. Vitamins: Prevents diseases like scurvy (Vitamin C deficiency) and rickets (Vitamin D deficiency). v. Minerals: Prevents conditions like anemia (iron deficiency) and osteoporosis (calcium deficiency). vi. Water: Prevents dehydration, supports metabolic activities, and maintains kidney function. **Talk for Learning Approach** • In a class discussion, use the radio reporter strategy to present your group report on the importance of a balanced diet. • Reflect on the presentation and share your experience of how your family meals support the diverse nutritional needs of the individual members and special groups in the family.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	2.1.1.LI.2	2.1.1.AS.2
	Identify dietary-related diseases and their causes among individuals, families and the community. **Talk for learning:** In a community-based discission brainstorm to discuss different dietary-related diseases Example :Obesity, Diabetes, Dypertension, Malnutrition, etc. **Experiential Learning and Collaborative Learning:** • In pairs and small groups watch videos or visit a community nutrition unit at the nearest hospital/social centre to find out the dietary related diseases among individuals, family the community and their implications. Example: a. Dietary-related diseases are health conditions caused by: i. Poor nutrition ii. Unbalanced diets iii. Unhealthy eating habits b. These diseases affect individuals, families, and entire communities, leading to: i. Economic burdens ii. Reduced productivity iii. Poor quality of life. • Conduct a case study analysis of a real-life scenario of people affected by dietary-related diseases. **Exemplar Case Study:** Type 2 Diabetes in an Office Worker: Mr. Mwini and Ms Kwakyewaa are 45 years and 32 years old respectively. They are both office workers and were diagnosed with Type 2 diabetes five years ago. Their job requires them to sit for long hours and they frequently consume fast food, sugary drinks and snacks due to their busy schedule. Analysis: Health issues faced: • Rapid weight gain (obesity).	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	• Frequent urination, excessive thirst and fatigue. • High blood sugar levels which can lead to nerve damage and blurred vision. Impact on family and community: • Their families had to adjust their diet to accommodate their conditions. • Increased medical expenses for insulin and check-ups. • Reduced productivity at work due to frequent hospital visits, etc., Intervention and solution: • Dietary changes: Reduced sugar intake, more fiber-rich foods and portion control. • Physical activity: Daily walks and exercise routines. • Adherence to regular medical check-ups and medication, etc.	
	2.1.1.LI.3	2.1.1.AS.3
	Analyse the effects of excessive consumption of processed foods and sugary drinks on health. **Experiential Learning/Project based Learning Approaches:** • In mixed cultural groups watch a video documentary on the impact of processed foods. • In your groups think-pair-share to discuss the impact of processed foods on healthy living among individuals, families and the community. Write your report for presentation. **Talk for Learning/Group Work**: • Organise a debate on the advantages and disadvantages of processed foods. Produce a group report for the debate arguing for or against the advantages and disadvantages of processed foods. • Reflection activities: assess how you and your family use processed food and the impact on you, the family and society. Example: a. Positive effects on individuals i. Convenience: Processed foods save time in preparation, making them useful for busy individuals. ii. Extended shelf life: Canned and frozen foods help reduce food waste and provide year-round availability.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	iii. Fortification: Some processed foods are enriched with essential nutrients such as iodized salt and fortified cereals. b. Negative Effects: i. Increased risk of chronic diseases ii. Nutritional Deficiencies iii. Addiction and Overconsumption, etc. c. Positive effects on Families i. Easier meal preparation: Ready-to-eat and frozen meals help families save time cooking. ii. Variety and accessibility: Processed foods provide a variety of meal options and ensure food availability in different seasons. d. Negative Effects: i. Health complications in children ii. Financial strain on healthcare iii. Loss of traditional cooking practices, etc. e. Positive effects on the community i. Economic growth: The processed food industry creates jobs and contributes to national economies. ii. Food Security: Fortified and long-lasting processed foods help address hunger and malnutrition in food-insecure regions. f. Negative Effects: i. Rising public health issues ii. Environmental pollution: iii. Food insecurity in low-income communities, etc. g. General Implication: i. Processed foods offer convenience and food security ii. Overconsumption leads to serious health risks at individual, family and community levels. iii. It is important to balance processed food intake with fresh, whole foods. iv. Encourage nutritional education v. Implement policies that regulate unhealthy food production, etc.	

Teaching and Learning Materials	• Sample food commodities • Cooking utensil • Ranges, serving dishes • Video • Computer	• Mobile phones (if possible) • Table linen • Cutlery • Crockery • Glasses	• Posters • Recipes books • Cruets • Flowers, etc.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century Skills and GESI	Assessment
2.1.1.CS.2	2.1.1.LI.1	2.1.1.AS.1
Demonstrate the ability to investigate food and nutritional interventions for managing food-related diseases at the household, community, national and global levels	**Explain basic concepts of nutritional interventions** **Talk for Learning Approaches:** In pairs/groups, use think-pair-share, mingling/talking point to explain basic concepts in nutritional interventions and present report for a whole class discussion. Example: Basic concepts in nutritional interventions: Strategies and actions designed to improve nutritional status and prevent or manage diet-related diseases at individual, family and community levels. These interventions aim to address: i. Malnutrition ii. Nutrient deficiencies iii. Diet-related health conditions iv. Dietary improvements v. Supplementation vi. Education vii. Policy implementation, etc. **Group Work and Collaborative Learning Approaches**: • In mixed ability/gender/cultural groups, visit a community nutrition centre in the hospital or social welfare centre to investigate the type of nutritional interventions that are available for individuals, families and the communities. • Present your findings for a whole class discussion and reflection. Example: a. Types of nutritional interventions i. Dietary-Based Interventions: Focus on promoting healthy eating habits and ensuring access to nutritious foods. ii. Balanced Diet Promotion: Encouraging a diet rich in fruits, vegetables, whole grains, lean proteins and healthy fats. iii. Dietary Diversification: Introducing a variety of foods to improve nutrient intake. iv. School Feeding Programs: Providing nutritious meals for children to improve their health and academic performance. v. Nutrition Education: Teaching individuals and families about proper meal planning, food preparation and healthy eating habits, etc.	Level 1 Recall **Level 2 Skills of conceptual understanding** Level 3 Strategic reasoning Level 4 Extended critical thinking and reasoning

	b. Supplementation-Based Interventions: Providing specific nutrients to individuals at risk of deficiencies. i. Vitamin A Supplementation: Helps prevent blindness and boosts immunity, especially in children. ii. Iron and Folic Acid Supplements: Used to prevent anemia in pregnant women and children. iii. Iodine Supplementation: Added to salt (iodized salt) to prevent goiter and brain development issues. iv. Zinc Supplementation: Supports immune function and reduces childhood mortality, etc. c. Fortification-Based Interventions: Adding essential nutrients to commonly consumed foods to prevent deficiencies. i. Fortified Flour: Enriched with iron and B vitamins to prevent anemia. ii. Fortified Dairy Products: Milk and margarine are fortified with vitamin D to prevent rickets and osteoporosis. iii. Iodized Salt: Helps in preventing iodine deficiency disorders like goiter, etc. d. Community and Policy-Based Interventions: Large-scale efforts by governments, NGOs and health organisations. i. Food Security Programs: Ensuring access to sufficient and nutritious food through food aid and agricultural development. ii. Breastfeeding Promotion: Encouraging exclusive breastfeeding for at least six months to improve infant nutrition. iii. Regulations on Processed Foods: Implementing policies to reduce trans fats, sugar, and salt in processed foods. iv. Nutrition Monitoring and Surveillance: Collecting data on malnutrition rates to design effective interventions, etc.	
	2.1.1.LI.2	2.1.1.AS.2
	Examine household and community-based food and nutritional interventions supporting individuals, families and societies. **Group Work and Collaborative Learning Approaches**: • In mixed ability groups, with the use of videos and charts, examine household and community-based food and nutritional interventions supporting individuals, families and societies to manage dietary related diseases.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	• Use a concept map to classify interventions under household-based and community-based categories. • Present your findings for a whole class discussion. Example: Household-based food and nutritional interventions: Focus on ensuring adequate nutrition and food availability within families through dietary improvements, food preparation techniques and nutrition education. a. Household food security and dietary practices: i. Home gardening ii. Livestock rearing iii. Food preservation and storage iv. Meal planning and balanced diets, etc. b. Nutritional education and awareness: i. Breastfeeding and infant nutrition ii. Healthy cooking methods iii. Reducing processed foods iv. Special diets for health conditions, etc. c. Household-Based supplementation and fortification i. Fortified foods ii. Vitamin and mineral supplements, etc. d. Community-Based food and nutritional interventions: Large-scale efforts that address food security and nutrition at the societal level through policies, programs, and collaborations. School and public health nutrition programs: i. School feeding programs ii. Nutrition awareness campaigns iii. Food banks and feeding centers e. Agricultural and food production initiatives i. Community gardens and farming projects ii. Support for local farmers iii. Livelihood and skill development programs, etc. f. Public health and policy-based interventions i. Food fortification policies ii. Regulations on processed foods iii. Nutrition surveillance and monitoring, etc. **Experiential Learning Approach:** Organise a role-play session for learners to conduct a role-play on household and community-based food and nutrition interventions.	

	Example: Sample Role-Play Activities i. Nutrition Education at a Community Health Centre: A community health worker conducts a nutrition education session for individuals in the community. ii. A Family Planning Healthy Meals: A family gather to discuss how to prepare a nutritious meal on a budget. The father suggests buying local and seasonal foods, while the mother explains the importance of protein, vitamins and carbohydrates. The teenage child questions the need for reducing junk food and the younger sibling wants more sugary snacks. The parents educate the children about healthy eating habits, etc. iii. A Farmer and Market Vendor Discuss Food Availability: A farmer visits a market vendor to sell fresh vegetables and grains. They discuss challenges in growing organic food. A customer asks for advice on affordable and nutritious meal options and the vendor encourages buying fresh produce instead of processed foods, etc. iv. School Feeding Program Debate: A head teacher at a basic school holds a community meeting to discuss implementing a school feeding program. A parent raises concerns about food quality, the government official explains the budget and the nutritionist emphasizes the importance of balanced meals, etc.	
	2.1.1.LI.3	2.1.1.AS.3
	Apply basic research skills to assess the impact and challenges of household-based and community-based food and nutritional interventions. **Experiential Learning/Project based Learning Approaches:** • In your groups, watch videos/pictures/posters/surf the internet and other sources to discuss the importances of household and community-based food and nutritional interventions. • In your groups, design a research tool to collect data from households, market vendors, health professionals and local leaders on the impact and challenges of household-based and community-based food and nutritional interventions. Example: a. Research tools i. Interview guide ii. Questionnaire iii. Observation checklist, etc.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**

	b. Sample research tasks: i. Home gardening ii. School feeding programs iii. Breastfeeding education, etc. • Present your research tools for peer-review. Example: a. Sample questions for questionnaire: i. What are the most common foods consumed in your household? ii. How often do you eat fresh fruit and vegetables? iii. Daily [ ] Weekly [ ] Rarely [ ] Never [ ] iv. How do you preserve and store food to ensure availability? v. Do you practice home gardening or livestock rearing? vi. Yes [ ] No [ ] (If no, why?) vii. How often does your household consume processed or packaged foods? viii. Are there any food taboos or cultural beliefs affecting food choices? etc. b. Research Strategy: Data collection methods: i. Interviews with households, community leaders, and health workers. ii. Observations of food consumption, dietary habits and food availability. iii. Focus Group Discussions with farmers, parents, and school officials, etc. c. Expected outcomes: i. Identify key challenges in food security and nutrition in the community. ii. Assess the effectiveness of household and community interventions. iii. Provide recommendations to improve food and nutrition programs, etc. **Group Research Work:** In your groups, conduct field research by visiting selected households or community centers to gather data. i. Compile your data and identify the patterns and themes of the responses, for instance common challenges in food interventions. ii. Analyse the data and create a summary report of the major findings on the impact and challenges of interventions. iii. Present your findings for a whole class discussion and assessment using charts, graphs or PowerPoint slides.	

	Example: a. Impact of household and community nutritional interventions: i. Improved health outcomes: Reduced cases of malnutrition, anemia and stunted growth in children. ii. Economic benefits: Lower medical costs due to fewer diet-related diseases. iii. Food security and sustainability: Ensures stable food supply and reduced dependency on external aid. iv. Enhanced educational performance: Proper nutrition supports better concentration, memory and learning outcomes in students, etc. b. Challenges in implementing food and nutritional interventions i. Food insecurity and poverty: Many families lack access to nutritious food due to financial constraints. ii. Cultural and traditional beliefs: Some local food taboos limit the consumption of nutrient-rich foods. iii. Limited resources and funding: Inadequate support for community nutrition programs. iv. Lack of awareness: Some individuals and families are unaware of proper nutrition practices, etc. **Problem-Based Learning and Collaborative Learning:** • In mixed cultural/gender groups, create a role play to evaluate possible solutions to challenges faced in food and nutrition. • Role-play as community leaders, nutritionists, farmers or government officials in a panel discussion to present your ideas on improving food and nutrition programs to promote healthy living. • In a whole class discussion share your personal reflection and recommend solutions to challenges such as affordability, availability accessibility and sustainability, etc. *Note: Emphasis on the need for confidentiality and ethical consideration in research.*		
Teaching and Learning Materials	• Sample food commodities • Cooking utensil • Ranges, serving dishes • Video • Computer	• Mobile phones (if possible) • Table linen • Cutlery • Crockery • Glasses	• Posters • Recipes books • Cruets • Flowers, etc.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century Skills and GESI	Assessment
2.1.1.CS.3	2.1.1.LI.1	2.1.1.AS.1
Demonstrate the ability to plan balanced meals that promote healthy living and meet nutritional needs.	**Demonstrate appropriate cooking methods that help retain nutrients in food to promote healthy living.** **Experiential Learning Approach**: • Organise a practical session to engage learners to observe a practical demonstration on methods of cooking to retain nutrients and promote healthy living. Example: i. Steaming ii. Grilling iii. Poaching iv. Boiling, etc. • In mixed cultural/random/friendship group, conduct a cooking experiment comparing nutrient retention in different cooking methods.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**
	2.1.1.LI.2	2.1.1.AS.2
	Develop a meal plan that meets the nutritional needs of individuals and families. **Problem-Based Learning:** In mixed ability/gender/random groups, brain-write/think-pair-share to discuss the factors to consider when planning meals for individuals and family members to achieve diverse food and nutritional needs. Example: i. Nutrients needs of family members ii. The type of meal iii. Resources available iv. Size of family v. Food preferences. vi. Health condition vii. Proportion of major nutrients viii. Cooking methods and mode of serving, etc.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	Experiential learning: • In mixed/ability groups surf the internet/watch videos/pictures/posters on meal planning for individuals and family members to assess the role of cultural and socio-economic factors in shaping food choices and meal patterns. • Develop the lesson around learner's immediate environment and experiences using everyday practices where different resources are used to encourage active participation of all learners. • Integrate the local and the emerging technological resources available to the learners and their families and the wider community using GESI friendly language to encourage active participation of all (males, females and SEN learners). **Group Work and Collaborative Learning:** • In mixed ability/gender/random groups, develop meal plans that meet the nutritional needs of different individuals and family members to promote healthy living. Example: i. Toddler/weaning babies ii. Adolescent, Pregnant and lactating mothers iii. Invalid and convalescence. iv. Manual workers v. Sedentary workers vi. Vegetarian, etc. • In mixed ability/gender groups, write a report on the factors to consider in planning healthy meals for the family and present it in class. Example: i. Nutrient needs of family members ii. The type of meal iii. Resources available – money, equipment, time, energy, knowledge and skills iv. Size of family v. Preferences (likes/dislikes). vi. Health condition vii. Proportion of major nutrients, etc.	

- In your groups, explore how to write and present your meal plans using the Assignment Plan template for the practical test.

Section A

Dishes Chosen

Dishes Chosen	Interpretations/Reasons for Choice	Chief ingredients and quantities

Section B

Quantities of Ingredients

Total quantities of all ingredients					
Fresh stores	Total quantities	Cost	Dry stores	Total quantities	Cost

Section C

Time Plan

Time	Activity

<table>
<tr><td></td><td>2.1.1.LI.3</td><td>2.1.1.AS.3</td></tr>
<tr><td></td><td>Plan special meals to support groups of individuals suffering from dietary related diseases in the family.
Managing talk for learning approaches: In mixed gender/random/pyramid groups, present a report for class discussion on how the nutritional needs of individuals and special groups in a family impact the meal planning process
Example:
i. Hypertensive
ii. Diabetic
iii. Anaemic

Group Work/Problem Based Learning:
• In mixed ability/gender/random groups, think-pair-share to discuss the challenges of planning healthy meals for special individuals in the family and present it in class.
1. Nutritional requirements vary
2. Food allergies and intolerances
3. Budget constraints
4. Time and convenience issues
5. Cultural and personal preferences
6. Availability of special dietary foods
• Present in class for feedback.
• Group present their report using different forms of presentation.
Note: Learners may use different ways/modes of presentations such as oral presentations, audio and videotape productions, photographic, written report.</td><td>Level 1 Recall
Level 2 Skills of conceptual understanding
Level 3 Strategic reasoning
Level 4 Extended critical thinking and reasoning</td></tr>
<tr><td>Teaching and Learning Materials</td><td>• Sample food commodities
• Cooking utensil
• Ranges, serving dishes
• Video
• Computer</td><td>• Mobile phones (if possible)
• Table linen
• Cutlery
• Crockery
• Glasses</td><td>• Posters
• Recipes books
• Cruets
• Flowers, etc.</td></tr>
</table>

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century Skills and GESI	Assessment
2.1.1.CS.4	2.1.1.LI.1	2.1.1.AS.1
Demonstrate appropriate skills in preparation, cooking and serving of meals for individuals and special groups in the family	**Prepare and cook balanced meals that meet the dietary needs of individuals and special groups in the family.** **Problem-based learning:** In mixed gender/ability groups use knowledge in nutrition to prepare, cook and serve planned meals for the following individuals and special groups in the family: 1. Toddler 2. Adolescent 3. Pregnant mothers 4. Lactating mother 5. Invalid and convalescence 6. Children 7. Dietary related health conditions a. Obesity b. Diabetics c. Other medical conditions. 8. Display prepared dishes for peer and teacher appraisal **Experiential Learning:** In small groups/task work group, interview a nutritionist or a dietitian to find out how they cater for nutritional needs of special individuals in society. Groups reflect and present their reports for peer review.	Level 1 Recall Level 2 Skills of conceptual understanding Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**
	2.1.1.LI.2	2.1.1.AS.2
	Apply proper serving techniques and table-setting skills suitable for different individuals and special groups, ensuring meal presentation is hygienic and appealing. **Talk for Learning:** Individuals/pairs/cultural groups share experiences on how to serve individual and family meals. **Experiential Learning:** Watch videos or demonstrations of meals service and table-setting to identify meal serving techniques and table-setting skills to help individuals and special groups meet diverse needs.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	Example: Proper meal serving techniques and table-setting skills ensure that meals times are appealing and comfortable for different individuals and special groups in a family. Example: i. Children: Use plastic, unbreakable plates and cups to avoid sharp cutlery ii. Elderly: Use non-slip placemats, easy-grip cutlery, and lightweight plates iii. Visual impaired individuals: Arrange utensils consistently and describe food placement, iv. Wheelchair users: Ensure table height allows easy access to food and utensils, etc. **Group Work:** • In mixed gender/cultural groups discuss tools and equipment used in table and trays setting (table appointments). Example: a. Categories of table appointments i. Flatware (Cutlery/Utensils) ii. Dinnerware (Crockery/Tableware) iii. Glassware (Stemware & Tumblers) iv. Table Linens v. Service ware (Serving Tools & Accessories) vi. Decorative Accessories, etc. b. Tray setting tools and equipment i. Tray ii. Covered plates iii. Cutlery packets iv. Napkins v. Condiment packets vi. Glass or cup vii. Bread and butter dish, etc. • In mixed ability groups discuss cover arrangements when setting a tray or a table. Example: i. Cover is the arrangement of a place setting for one person. ii. It consists of all dinnerware, glassware and cutlery used by one person at a table. **Group Work**: In mixed ability groups, discuss basic meal service and table setting guidelines for everyone.	

	Example: i. Ensure cleanliness: The table should be clean, and utensils should be well-arranged. ii. Place essential items: Forks go on the left, knives and spoons on the right. iii. Provide napkins: Napkins should be placed neatly on the left or on the plate. iv. Use proper glassware: Water or juice glasses should be placed above the knife. **Experiential Learning:** • In mixed ability/gender groups embark on a field trip to hotels/restaurants/chop bars in the community to observe table setting styles and present a report in class. • Watch videos on role-play/ demonstrate different types of meal services and table-setting and explore the techniques of setting table. • Conduct practical activity, exhibit the skills of meal service and table setting for individuals and special groups in the family for peer appraisal. Example: Meal service and table setting are very important aspects of dining that enhance the presentation and consumption of food. Different meal service styles are used depending on the occasion, cultural practices and the needs of individuals. a. Types of meal services i. Family-Style Service ii. Buffet Service iii. Plate Service iv. English Service v. Cafeteria Service vi. Room Service, etc. b. Types of table setting i. Basic table setting ii. Formal Table Setting iii. Buffet Table Settin iv. Banquet Table Setting v. Restaurant table setting, etc. c. Steps i. Clean and iron the tablecloth before setting the table. ii. Arrange cutlery in order of use (from outside to inside). iii. Place glasses above the knives for easy access.	

	iv. Ensure enough space between each place setting for comfort. v. Use centerpieces and candles for formal dining to enhance aesthetics, etc.		
Teaching and Learning Materials	• Sample food commodities • Cooking utensil • Ranges, serving dishes • Video • Computer	• Mobile phones (if possible) • Table linen • Cutlery • Crockery • Glasses	• Posters • Recipes books • Cruets • Flowers, etc.

Subject FOOD AND NUTRITION
Strand 1. NUTRITION AND HEALTH
Sub-Strand 2. FOOD SECURITY

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
2.1.2.LO.1		
Demonstrate an understanding of the principles of food preservation and their importance in ensuring food security at the household level.	**Presentation skills:** • Use different modes of presentation efficiently. • Speak clearly to convey thoughts to a wider group. **Creativity, innovation and resourcefulness**: Develop different and new ways of preserving food. **Critical thinking:** Think rationally and analyse how local and modern technologies are used to preserve food commodities. **Communication and collaboration:** Share ideas using constructive critiquing and feedback in group discussions. **Self-directed learning:** • Take an active part in group discussions. • Ask probing and relevant questions to check and build understanding. **Entrepreneurial skills:** Preserve and use marketing strategies to sell products.	**GESI:** Learners having experienced a teaching approach that ensures gender equality and social inclusion, where they work with each other in an inclusive way; cross-sharing knowledge and understanding among groups and individuals lead them to: • Respect individuals of different backgrounds with regards to food preservation. • Embrace diversity and practice inclusion. **SEL:** Learners having been given the opportunity to experience varied teaching approaches in an enabling environment will be equipped with social emotional learning skills to: • Demonstrate respect for diversity and share cultural background experiences with regards to food preservation. • Apply knowledge to solve real-world problems and issues related to food preservation. • Develop strategies to complete a task or learn a new concept. • Understand causes and effects of food preservation

		National Values: • Tolerance • Friendliness • Open mindedness • Patience • Hard work • Humility
2.1.2.LO.2		
Apply appropriate food preservation techniques to extend the shelf life of perishable foods for sustainable healthy living.	**Communication and collaboration** • Understand and respect the needs, perspective and actions of others (empathy). • Share ideas, Understand and respect the needs, perspective and actions of others (empathy). • Speak clearly and convey simple answers or thoughts **Critical thinking and problem solving** Seek additional information to build understanding of a complex problem. **Creativity and innovation** • Use local resources to produce prepare some preserves using scientific principles. • Combine ideas or concepts to package preserves using scientific principles to ensure food safety and security **Self – directed learning** • Take part in the preparation of preserves. • Probe to check ideas and understanding.	**GESI:** Learners having experienced a teaching approach that ensures gender equality and social inclusion, where they work with each other in an inclusive way; cross-sharing knowledge and understanding among groups and individuals lead them to: • Respect individuals of different backgrounds with regards to food preservation. • Embrace diversity and practice inclusion. **SEL:** Learners having been given the opportunity to experience varied teaching approaches in an enabling environment will be equipped with social emotional learning skills to: • Demonstrate respect for diversity and share cultural background experiences with regards to food preservation. • Apply knowledge to solve real-world problems and issues related to food preservation and packaging. • Develop strategies to complete a task or learn a new concept. • Understand causes and effects of food preservation

		National Values: • Tolerance • Friendliness • Open mindedness • Patience • Hard work • Humility

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century Skills and GESI	Assessment
2.1.2.CS.1	2.1.2.LI.1	2.1.2.AS.2
Explain the principles and methods of food preservation and their role in ensuring food security.	**Describe the principles of food preservation and how they help maintain food quality and safety.** **Problem-Based Learning:** • In mixed ability/gender groups, brainstorm the reasons why food spoils and how preservation helps. • Brain-write to explain the concept of food preservation and your view with your group members. Example: Food preservation is the process of treating and handling food to prevent or slow down spoilage while maintaining its quality, safety and nutritional value. The principles of food preservation are based on controlling factors that cause food deterioration, such as microbial growth, enzyme activity and chemical changes. • In your groups videos/ use real-life scenarios such as food wastage at home to discuss food security. Example: a. Real-Life Scenarios: i. Spoiled vegetables in the refrigerator ii. Leftover cooked rice discarded iii. Bread growing mold too quickly b. How food waste at home affects food security: i. Food security means having reliable access to nutritious food. ii. Household food wastage contributes to global food insecurity because resources used in food production such as water, labour and energy are wasted. iii. Practicing food preservation techniques such as proper storage, refrigeration, freezing and drying helps to reduce food wastage and promotes food security. c. In mixed cultural/random groups review your understanding of factors affecting food spoilage: i. Microbial growth ii. Enzymes iii. Oxidation.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	Managing Talk for Learning approaches: In pairs, share your experiences to discuss the importance of food preservation. **Importance of food preservation:** 1. Food preservation reduces food costs. 2. It ensures food security. 3. To make food safe for consumption. **Group Work and Collaborative Learning:** Discuss the major principles of food preservation. Example: **Principles of food preservation:** Yeast, molds, bacteria, enzymes are some agents of food spoilage which survive in favorable conditions such as air, food, warmth. To preserve foods, these favorable conditions must be arrested through scientific principles such as: i. Prevention of microbial growth: Temperature control ensures micro- organisms grow slowly in lower temperatures such as in freezers or refrigerators or in high temperatures as in cooking and pasteurisation. ii. Moisture control: Reducing the water content in foods through drying/ dehydration. iii. Acidity levels: low pH levels arrest microbial growth in pickling and fermentation of foods. iv. Prevention of oxidation: Addition of antioxidants prevents or reduces oxidation in food. v. Proper packaging and storage: Provide a modified atmosphere to prevent food spoilage, etc. • Group present their findings using different forms of presentation. *Note: Learners, use different ways/modes of presentations such as: oral presentations, audio and videotape productions, photographic, written report.*	
	2.1.2.LI.2	2.1.2.AS.2
	Describe the various food preservation methods and their effectiveness in extending food shelf life **Talk for learning approaches:** In mixed ability/gender groups, think-pair-share to identify different factors affecting food spoilage and how they relate to preservation methods.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning**

	Example: Causes of food spoilage: a. Microbial growth: i. Microorganisms such as bacteria, molds and yeasts break down food components, leading to spoilage, off-odours, slimy textures and foodborne illnesses. ii. Conditions favouring Growth: Warm temperatures, moisture, oxygen and nutrients. b. Related preservation methods: i. Freezing: Slows down microbial activity by reducing temperature. ii. Canning and Pasteurisation: Uses heat to kill microbes and extend shelf life. iii. Drying: Removes moisture to prevent microbial growth. iv. Salting and Sugaring: Creates a high osmotic environment that dehydrates microbes and inhibits their growth, etc. c. Enzyme activity: i. Enzymes naturally present in food speed up biochemical reactions, causing ripening, browning and texture changes. For instance, overripe fruits, browning of cut apples and potatoes. d. Related preservation methods: i. Blanching: Brief boiling or steaming before freezing to inactivate enzymes. ii. Refrigeration: Slows down enzymatic activity. iii. Acidification (Pickling): Lowering pH with vinegar or lemon juice slows enzyme activity. e. Oxidation: i. Chemical reactions occur due to exposure of food to oxygen that leads to rancidity in fats, loss of colour in fruits and vegetables and nutrient degradation. This includes rancid oil, browning of cut fruits, loss of vitamin C in exposed food. f. Related preservation methods: i. Vacuum Packaging: Removes air to slow oxidation. ii. Antioxidants (Vitamin C, Citric Acid): Prevents oxidation in food. iii. Refrigeration & Freezing: Slows down chemical changes caused by oxygen. g. Moisture content i. Excess moisture encourages microbial growth, enzymatic activity, and texture deterioration. For example, moldy bread, slimy vegetables and softened cereal. h. Related preservation methods: i. Dehydration by drying, smoking, and freeze-drying to reduce moisture to inhibit spoilage. ii. Use of desiccants such as Silica Gel in packaged food to absorbs excess moisture.	Level 4 Extended critical thinking and reasoning

	iii. Proper storage using airtight containers and or refrigeration to prevent moisture absorption from the environment, etc. **Talk for learning approaches:** In mixed ability/gender groups, think-pair-square-share to explain how food preservation contributes to reducing food waste and enhancing food security 1. Extending shelf Life: This ensures food is available for consumption over an extended period, reducing wastage at household and commercial levels. 2. Preventing food wastage: Less food is thrown away and consumers can use products before they become unsafe. 3. Reducing post-harvest losses: Farmers and food suppliers reduce losses, ensuring continuous availability of food throughout the year. 4. Supporting efficient food distribution: People in remote areas or during emergencies have access to safe and nutritious food. 5. Encouraging sustainable food consumption: Families save money while contributing to food security by making the most of available food, etc.	
	2.1.2.LI.3	2.1.2.AS.3
	Differentiate between various food preservation methods such as drying, freezing, fermentation and canning. **Talk for Learning Approaches:** In mixed ability/gender groups, think-pair-share how to use technology to preserve food commodities and present to class. Example: a. Sample foods to preserve: i. Fish ii. Pepper iii. Cassava iv. Maize b. Methods of food preservation: i. Canning ii. Pickling iii. Drying / dehydration iv. Freezing v. Salting, etc.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	Experiential Learning/Group Work: • In mixed cultural/gender watch videos or case study scenarios to analyse the advantages and limitations of different food preservation techniques. Example: Different food preservation techniques help extend shelf life, maintain food quality and reduce food waste. However, each method has its advantages and limitations, depending on factors such as cost, effectiveness and impact on food texture, taste and nutrients. **i.** Freezing ii. Refrigeration iii. Drying/Dehydration iv. Canning v. Salting and Sugaring vi. Fermentation vii. Vacuum Packaging, etc. • Invite a food preservation expert or local food processor to demonstrate a preservation method. • In mixed cultural/gender groups, research and present on a selected food preservation method. **Talk for Learning Approach:** • In a whole class discussion, individually share your experiences and your knowledge and skills of how food preservation can be applied to promote sustainable food security in households. • Discuss the challenges facing food preservation at household, community, and national levels.	
Teaching and Learning Materials	• Samples of preserves • Note pad and pens • Internet services • Computers • Projector	• Videos • Pictures • Charts and realia (sample packaged foods) • Sample food commodities • Charts Posters on preservation, etc.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century Skills and GESI	Assessment
2.1.2.CS.2	2.1.2.LI.1	2.1.2.AS.1
Demonstrate the ability to apply appropriate food preservation techniques to extend the shelf life of perishable foods and promote sustainable food security practices.	**Demonstrate the application of appropriate food preservation methods to support sustainable food security at the household and community levels.** **Experiential/collaborative learning:** • In mixed gender/ability groups, surf the internet and other sources to find out the modern/current ways of preserving food commodities. • Organise hands-on practical sessions to apply preservation methods of your choice. • Conduct a mini-project to preserve a food item at home and document the process. Example: i. Marmalade ii. Jam iii. Pickles iv. Shito ***Values:*** *Discuss the value of love, honesty, truthfulness in the use of additives. Do not use formalin to preserve fish or meat for consumption. Do not use unwholesome ingredients to prepare preserves for sale or consumption.* **Group Work:** In gender/friendship groups suggest marketing strategies for your preserves and produce a report in class.	Level 1 Recall Level 2 Skills of conceptual understanding Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**
	2.1.2.LI.2	2.1.2.AS.2
	Package and store preserved food under suitable conditions to maintain quality and safety. Scientific principles of packaging **Experiential Learning/Project-Based Learning:** • In mixed gender/ability groups, visit a local market or food processing center to observe how preserved/processed foods are packaged. Food packaging materials: 1. Vapour proof 2. Grease proof	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**

	3. Waterproof 4. Odourless 5. Glass 6. Vacuum Packaging: Removes air to slow oxidation • Prepare and package your preserved food product and store to evaluate the effectiveness of preservation techniques in preventing food spoilage and extending shelf life. • Package preserves using scientific principles to ensure food safety and security. **Experiential/collaborative learning:** • In mixed gender/ability groups, surf the internet and other sources to research modern/current packaging practices/process. Example: Current packaging principles Physical principles i. Protection: Packaging material should absorb shocks, vibrations and prevent damage to the products ii. Containment: Packaging should prevent leakages and spillages of contents or products iii. Structural Integrity: Throughout transportation, storage and handling, packaging should maintain its shape **Group Work:** In mixed ability/gender/random groups, discuss the meaning and importance of packaging. Example: Packaging is the science, art and technology of protecting products for distribution, storage, sales, advertisement and use. Importance of food packaging: i. To prevent contamination. ii. To make food attractive. iii. To prevent transfer of flavour, etc. Chemical principles i. Chemical resistance ii. Withstand corrosion	

	iii. Non-toxicity Biological i. Sanitation: Packaging should be easy to clean and sanitise ii. Pest control: It should prevent pest infestation • In mixed gender/ability groups, package and label preserves for exhibition. Example: i. Marmalade ii. Jam iii. Pickles iv. shito • Organise an exhibition to showcase your stored preserves for peer and teacher appraisal. ***Values:*** *Discuss the value of love, honesty, truthfulness in the use of additives. Do not use formalin to preserve fish or meat for consumption. Do not use unwholesome ingredients to prepare preserves for sale or consumption.*	
Teaching and Learning Materials	• Samples of preserves • Note pad and pens • Internet services • Computers • Projector • Videos	• Pictures • Charts and realia (sample packaged foods) • Sample food commodities • Charts • Posters on preservation, etc.

Subject FOOD AND NUTRITION
Strand 2. FOOD PRODUCTION
Sub-Strand 1. FOOD PRODUCTION TECHNOLOGY

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
2.2.1.LO.1		
Exhibit the ability to apply knowledge and principles of heat transfer to select appropriate cooking methods for meal preparation and food processing.	**Presentation skills:** • Use different modes of presentation efficiently. • Speak clearly to convey thoughts to a wider group. **Creativity, innovation and resourcefulness**: use the knowledge and principles in heat transfer to select the appropriate cooking methods in meal preparation. **Critical thinking:** Think rationally and analyse how local and modern technologies are used to select the appropriate cooking methods in meal preparation. **Communication and collaboration:** Share ideas using constructive critiquing and feedback in group discussions. **Self-directed learning:** • Take active part in group discussions. • Ask probing and relevant questions to check and build understanding.	**GESI:** Learners having experienced a teaching approach that ensures gender equality and social inclusion, where they work with each other in an inclusive way; cross-sharing knowledge and understanding among groups and individuals lead them to: • Respect individuals of different backgrounds with regards to principles of heat transfer in selecting cooking methods. • Embrace diversity and practice inclusion with regards to principle of heat transfer in selecting cooking methods. **SEL:** Learners having been given the opportunity to experience varied teaching approaches in an enabling environment will be equipped with social emotional learning skills to: • Make choices and present ideas about principles of heat transfer to select appropriate cooking methods. • Believe that their thoughts and opinions are valued.

		• Understand **the various methods of heat transfers** **National Values:** • Tolerance • Friendliness • Open mindedness • Patience • Hard work • Humility
2.2.1.LO.2		
Apply scientific knowledge of heat transfer, cooking tools, and fuels in food processing to ensure food safety.	**Communication and collaboration:** • Understand and respect the needs, perspectives, and actions of others (empathy). • Share ideas, understand and respect the needs, perspectives, and actions of others (empathy). • Speak clearly and convey simple answers or thoughts. **Critical thinking and problem solving:** Seek additional information to build their understanding of a complex problem. **Creativity and Innovation:** • Use local resources to produce novel products. • Combine ideas or concepts to create new food additives and condiments. **Self-directed learning:** • Take part and respond in a group discussion. • Probe to check ideas and build understanding.	**GESI:** Learners having experienced a teaching approach that ensures gender equality and social inclusion, where they work with each other in an inclusive way; cross-sharing knowledge and understanding among groups and individuals lead them to: • Respect individuals of different backgrounds with regards to cooking methods and meal preparation. • Embrace diversity and practice inclusion with regards to cooking methods and meal preparation. • Examine and dispel misconceptions/myths about cooking methods. **SEL:** Learners having been given the opportunity to experience varied teaching approaches in an enabling environment will be equipped with social emotional learning skills to:

		• Make choices and present their ideas about cooking methods. • Believe that their thoughts and opinions are valued. • Understand cause and effect of heat transfer in cooking. **National Values**: • Tolerance • Friendliness • Open mindedness • Patience • Hard work • Humility

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century Skills and GESI	Assessment
2.2.1.CS.1	2.2.1.LI.1	2.2.1.AS.1
Demonstrate an understanding of how to apply scientific principles of heat transfer in food preparation and processing to promote food safety.	**Discuss the various methods of food preparation and processing that apply principles of heat transfer.** **Group work and Collaborative learning:** In pairs, reflect on your knowledge of the methods of cooking to identify the methods of food preparation and processing that apply principles of heat transfer. 1. Conduction-Based Methods a. Frying: Shallow and deep frying b. Sautéing and Stir-Frying c. Boiling and Simmering d. Grilling: Contact grills e. Baking and Roasting, etc. 2. Convection-Based Methods a. Boiling and Simmering b. Steaming c. Deep Frying d. Baking in convection ovens e. Pasteurization and sterilisation, etc. 3. Radiation-Based Methods a. Grilling and Broiling b. Microwaving c. Infrared Cooking d. Food irradiation, etc. **Experiential learning:** In mixed ability/gender/cultural groups, watch videos/experiments of the various heat transfers used in food preparation and processing. **Managing talk for learning approaches:** • In mixed ability/gender groups, explain the major principles of heat transfer that households apply in food preparation and processing.	Level 1 Recall **Level 2 Skills of conceptual understanding** Level 3 Strategic reasoning Level 4 Extended critical thinking and reasoning

	• In a whole class discussion, groups present the findings using different presentation modes**.** Example: i. Conduction: Direct contact heat transfer that occurs when heat moves through direct contact between a heat source and food. It is efficient for controlled cooking and preserving nutrients and reducing food waste. ii. Convection: Heat transfer through moving fluids, air, water or oil that distributes heat evenly through circulating air, water or oil, ensuring efficient cooking and preservation. iii. Radiation: Heat transfer through electromagnetic waves without direct contact, ensuring quick and efficient energy use. • Groups present their findings for the whole class discussion using the radio reporter strategy.	
	2.2.1.LI.2	2.2.1.AS.2
	Relate the various principles of heat transfer to different methods of food preparation and processing. **Managing talk for learning approaches:** In mixed ability /gender groups, discuss how the principles of heat transfer influences food preparation and processing in households. Example: Heat transfer is very important in food preparation and processing, affecting texture, flavour, nutritional value and safety. The three primary modes of heat transfer conduction, convection and radiation are applied in both household cooking and the food industry to ensure efficient and effective food production. Conduction in food preparation and processing Application in Households: i. Cooking on stovetops ii. Baking in ovens iii. Use of kitchen utensils, etc. Application in the Food Industry: i. Thermal processing	Level 1 Recall **Level 2 Skills of conceptual understanding** Level 3 Strategic reasoning Level 4 Extended critical thinking and reasoning

	ii. Manufacturing canned foods iii. Meat processing, etc. Convection in Food Preparation and Processing Application in Households: i. Boiling and simmering ii. Baking in convection ovens iii. Deep-frying, etc. Application in the Food Industry: i. Forced convection ovens ii. Spray drying iii. Air-blast freezing, etc. Radiation in Food Preparation and Processing Application in Households: i. Grilling and broiling ii. Microwave cooking iii. Toasting, etc. Application in the Food Industry: i. Infrared heating ii. Microwave processing iii. Food irradiation, etc. **Group work/Problem base learning:** • In small groups conduct an experiment to analyse the implications of heat transfer in food preparation and processing. • Present your findings for the whole class discussion. Example: Implications for food preparation and processing Nutritional impact: i. Some heat transfer methods help retain nutrients better than others convection in frying. ii. Excessive heat exposure can degrade vitamins, etc. Food safety: i. Proper heat transfer ensures the destruction of harmful microorganisms	

	ii. Uneven heat transfer can lead to foodborne illnesses if certain parts remain undercooked, etc. Efficiency and cost considerations: i. The food industry uses advanced convection-based systems to enhance efficiency. ii. Infrared and microwave heating reduce cooking times and energy consumption, etc. Quality and sensory attributes: i. Different methods influence texture **ii.** Maillard reaction and caramelization in baked goods rely on heat transfer principles, etc. • In a plenary session, groups build on what others say, share views and ask questions for clarification**.** • Assign roles to encourage active participation of all learners**.**		
Teaching and Learning Materials	• Flip charts • Charts/pictures/posters • Sticky notes • Realia of food	• Internet • Smart phones (if possible) • Cameras • Computers	• Projectors • Videos of types of methods of heat transfer • Charts/pictures/posters of methods of heat transfer,

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century Skills and GESI	Assessment
2.2.1.CS2	2.2.1.LI.1	2.2.1.AS.1
Demonstrate the ability to apply knowledge and principles of heat transfer to select and use appropriate cooking methods, tools, and fuels for food preparation and processing.	**Discuss the different methods of food preparation and processing to promote sustainable food safety practices.** **Group work and Collaborative learning:** In pairs, review knowledge on the methods of cooking learnt in JHS Career Technology. Example: Sustainable Cooking Methods Dry heat method i. Baking ii. Grilling iii. Roasting iv. Air frying v. Solar cooking Moist method i. Poaching ii. Stewing iii. Steaming Sustainable Food Processing i. Pasteurization methods ii. Fermentation iii. Drying and Dehydration iv. Freezing and Cold Storage v. Vacuum Sealing and Packaging **Group work and Collaborative learning:** In pairs, discuss the importance of using sustainable methods of cooking and processing food. Reducing food waste in preparation and processing i. Upcycling food scraps ii. Composting	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	iii. Portion control cooking iv. Using sustainable cooking Fuels **Group work and Collaborative learning:** Explain common terminologies used in food preparation and processing and present your findings for a whole class discussion. Example: i. Marinade ii. Dice iii. Knead iv. Blend v. Baste vi. Blanch vii. Coat viii. Glaze ix. Refresh x. Saute´ xi. Toss, etc. **Experiential learning:** In mixed ability/gender/cultural groups, watch videos/conduct experiments on different methods of cooking to prepare suitable dishes write a report describing the advantages and disadvantages of different cooking methods	
	2.2.1.LI.2	2.2.1.AS.2
	Analyse the challenges of applying the various heat transfer principles in food preparation and processing. **Talk for Learning /Collaborative Learning:** In a whole class discussion, building on what others say, analyse the challenges of applying the various heat transfer principles in food preparation and processing. Challenges in conduction-based methods 1. Heat distribution may be uneven	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning**

	2. Heat loss and energy inefficiency 3. Food sticking to cooking surfaces, etc. Challenges in convection-based methods 1. Energy consumption in large-scale processing 2. Poor air/fluid circulation can lead to uneven cooking. 3. Moisture and nutrient Loss, etc. Challenges in radiation-based methods: 1. Risk of overcooking or undercooking 2. Health and safety concerns 3. Equipment costs and maintenance, etc. **General challenges in heat transfer application in food processing** 1. Balancing food safety and nutrient retention 2. Environmental impact of heat-based processing 3. Technological and cost barriers in developing regions 4. Food safety risks from improper heat control, etc.		Level 4 Extended critical thinking and reasoning
Teaching and Learning Materials	• Flip charts • Charts/pictures/posters • Sticky notes • Realia of food	• Internet • Smart phones (if possible) • Cameras • Computers	• Projectors • Videos of types of methods of heat transfer • Charts/pictures/posters of methods of heat transfer,

Subject FOOD AND NUTRITION
Strand 2. FOOD PRODUCTION
Sub-Strand 2. FOOD PROCESSING TECHNIQUES

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
2.2.2.LO.1		
Apply scientific knowledge, principles and skills to produce natural food additives and condiments for exhibition.	**Metacognition:** Think deeply to understand, adapt, change and use knowledge in analysing food additives and condiments. **Digital literacy:** Use computers and phones to surf the internet for information and present work in class for discussion. **Critical thinking and problem solving:** Seek additional information to build understanding of a complex problem. **Creativity and Innovation:** • Adapt and use local resources to produce novel products. • Combine ideas or concepts to create new food additives and condiments. **Self-directed learning:** • Take part and respond in a group discussion. • Probe to interrogate ideas and build understanding. **Communication and collaboration:** • Work effectively in different groups. • Share their ideas with peers and accept constructive feedback. • Use different modes of presentation and speak clearly to convey their thoughts to a wider group.	**GESI:** Learners having experienced a teaching approach that ensures gender equality and social inclusion, where they work with each other in an inclusive way; cross-sharing knowledge and understanding among groups and individuals lead them to: • Respect individuals of different backgrounds in relation to the production of natural food additives. • Embrace diversity and practice inclusion. **SEL:** Learners having been given the opportunity to experience varied teaching approaches in an enabling environment will be equipped with social emotional learning skills to: • Use a range of strategies to help them manage their work (e.g., checklists, reminders, prompts). • Enforce clear expectations regarding behaviours in producing natural food additives and condiments for exhibition.

		• Work to foster awareness of real world problems and issues related to additives and condiments. **National Values:** • Tolerance • Friendliness • Open mindedness • Patience • Hard work • Humility
2.2.2.LO.2		
Apply scientific knowledge, principles and skills to produce enriched flour products that meet nutritional needs.	**Communication and Collaboration:** • Express thoughts freely to work in groups and accept others' views. • Use ICT tools efficiently in presentations. • Apply different modes of presentation. **Digital literacy:** Search for information using ICT tools and skills. **Creativity and Innovation:** Create local and new flour products. **Critical thinking and problem solving:** • Think critically to solve problems and create new products for use in society • Express oneself, to work in groups and accept others' views.	**GESI:** Learners having experienced a teaching approach that ensures gender equality and social inclusion, where they work with each other in an inclusive way; cross-sharing knowledge and understanding among groups and individuals lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Clear misconceptions/myths about enrichment of flour products. **SEL:** Learners having been given the opportunity to experience varied teaching approaches in an enabling environment will be equipped with social emotional learning skills to: • Listen to peers' opinions and express disagreements in constructive ways.

		• Practice and manage thoughts and behaviours. • Acknowledge strengths to build self-confidence. • Set goals on food production and work to achieve them. **National Values**: • Tolerance • Friendliness • Open mindedness • Patience • Hard work • Humility

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century Skills and GESI	Assessment
2.2.2.CS.1	2.2.2.LI.1	2.2.2.AS.1
Demonstrate knowledge, understanding, and skills in the development and use of food additives and condiments.	**Distinguish between food additives and condiments used in food production.** **Problem based learning:** In mixed ability/gender/cultural/random/friendly groups, brainstorm on the meaning of the concepts of additives and condiments. Example: **Food additives:** Food additives are naturally, or artificially produced substances added to food in small quantities to enhance flavour, colour, nutritive value: i. Stock ii. Cubes/tablets iii. All seasoning iv. Mixed spices **Condiments**: A condiment is a preparation that is added to food, typically after cooking, to impart a specific flavor, to enhance the flavor, or to complement the dish. A table condiment or table sauce is more specifically a condiment that is served separately from the food and is added to taste by the diner i. Vinegar, Tabasco sauce ii. Ketchup, Table salt iii. Mustard, Olive oil iv. Ground ginger, Ground pepper, etc. **Structuring Talk for Learning:** In mixed gender/ability/cultural groups, use pictures/realia/videos to observe the use of additives and condiments in food preparation. **Collaborative Learning:** • In pairs, distinguish between food additives and condiments and report for whole class discussion. • In mixed ability/gender groups discuss the various uses of food additives and condiments. Example: i. It helps to stimulate bile flow. ii. It is used to add flavour to stews and soups. iii. It adds flavour and colour.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	iv. It adds taste to the food. v. It is used for cleaning vegetables and fish. *Values: Discuss the value of love, honesty, truthfulness in the use of additives. Do not use dyes for colouring food and adulterating groundnut paste with "konkonte" or "tombrown", or powdered pepper with ground cola nuts and pear seeds, etc.*	
	2.2.2.LI.2	2.2.2.AS.2
	Conduct experiments to develop natural colours from natural food sources. **Experiential Learning:** In groups, survey the market to identify different natural food colours or dye sources. Write a report and present using different modes of presentation- pictures/photographs/ videos, realia/power point. Example: beetroot, turmeric, karadafa leaves etc. **Experiential Learning/Project based learning**: In mixed ability groups, use scientific knowledge, skills and natural sources such as roots, leaves and seeds, to develop natural food colours. Write a report and present for the whole class discussion. *Note: Use only natural edible food colour sources.* ***Value:*** *the value of love, honesty and truthfulness in the use of additives. Do not use dyes for colouring food. Do not adulterate powdered pepper with ground cola nut and avocado pear seeds.*	Level 1 Recall Level 2 Skills of conceptual understanding Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**
	2.2.2.LI.3	2.2.3.AS.3
	Prepare food additives and condiments and label them **Project based learning:** In mixed ability/gender groups, prepare and package different food additives and condiments from local food sources and present in class for appraisal. Example: i. Prekese - powder ii. Turckey berry – powder iii. Aniseeds and rosemary – powder iv. Karadafa leaves - powder etc.	Level 1 Recall Level 2 Skills of conceptual understanding Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**

Teaching and Learning Materials	• Samples of flours • Videos • Pictures • Note pad and pens • Internet services • Charts • Computer	• Projector • Samples/pictures of basic ingredients- yeast/baking • powder/baking soda • Sugar • Fat • Flavourings • Cooking oil	• Internet services • ICT tools Pictures of basic ingredients used in flour cookery. Presentations in different modes • Large tables • Mixing bowls • Oven • Baking sheets • Rolling board and pin Palate knife Pictures of flour products, etc.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century Skills and GESI	Assessment
2.2.2.CS.2	2.2.2.LI.1	2.2.2.AS.1
Demonstrate knowledge, understanding and skills in the application of scientific principles in flour cookery and enrichment.	**Explain the scientific principles underlying flour cookery, including gluten formation, gelatinisation and leavening.** **Structuring Talk for Learning:** In mixed gender/ability/cultural groups, watch videos, charts/picture or realia discuss the different types of flour used in flour cookery. Example: i. Wheat flour ii. Cassava flour iii. Corn flour iv. Rice flour v. Beans flour **Talk for Learning/collaborative:** • In mixed gender/ability/cultural groups, use pyramid discussion to classify the flours according to their sources: Root; Grains/cereals; Legumes; Plantain • In mixed ability/gender/random groups classify wheat flours according to their usage in flour products Example: i. Soft Flour ii. Hard/strong flour iii. All-purpose flour iv. Composite flour v. Self-rising flour **Experiential Learning/Project-Based Learning**: • In groups, observe experts of flour cookery to explain how gluten formation affects the texture of baked goods. • Conduct an experiment on gluten formation and gelatinisation to demonstrate the effect of different types of flour on product quality. i. Whole wheat ii. Refined flour iii. Soft Flour	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	iv. Hard/strong flour, etc.	
	2.2.2.LI.2	2.2.2.AS.2
	Discuss the basic ingredients used in flour cookery. **Structuring Talk for Learning**: • In mixed gender/ability/cultural groups, watch pictures/realia and discuss the basic ingredients used in flour cookery. • Surf the internet and find out from other sources, basic ingredients used in flour cookery and report in class. Example: i. Flour - forms the structure of the product ii. Fat - adds colour, flavour and makes the product tender iii. Sugar – sweetens, adds colour and preserve foods iv. Eggs – add nutritive value, add colour, as a raising agent. v. Raising agents: Substances introduced into flour mixtures to make them light, porous and increased in volume. **Experiential Learning/Collaborative Learning:** • In mixed gender/ability/cultural groups observe resource persons direct demonstration or videos to identify how the basic ingredients are used in flour mixtures and their functions in producing quality flour products. • In your groups, conduct an experiment on the role of leavening agents in flour mixtures. Example: i. Yeast, ii. Baking powder iii. Baking soda, etc. **Experiential/Collaboration Learning:** In mixed gender/ability/cultural groups, visit a bakery to research the ingredients used and their functions in flour products and report in class.	Level I Recall **Level 2 Skills of conceptual understanding** Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**

	2.2.2.LI.3	2.2.2.AS.3
	Apply appropriate techniques to improve the texture and nutritional value of flour-based products. through enrichment and fortification **Project based learning/ Experiential Learning:** In mixed ability/gender groups, experiment with flour products and ways to enrich/fortify them Example: i. Creaming - rich cake ii. Rubbing in – rock cake iii. Melted fat method – gingerbread iv. Whisking method – sponge cake, swiss roll **Fortified flour products** Example: bread – moringa bread, cake – soya cake, carrot - rock buns, oat - turn overs, garlic - chips, egg – vegetables - koose, coconut - puff loaf, beans - maasa, soya- ayigbe biscuit, groundnut poolo. etc **Experiential Learning/Project-based learning:** • In groups, research ways that food can be enriched and use the knowledge and skills to enrich/fortify the flour products produced. **Or** • Visit a bakery or enterprises that produce/make flour goods/products and enquire how to enrich/fortify them using different ingredients/ raising agents and report in class. • Write a report on findings and display your enriched/fortified flour products. ***Values:*** *be honest by using the appropriate filling for pastries. Do not colour koko with charcoal.*	Level 1 Recall Level 2 Skills of conceptual understanding Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**
	2.2.4..LI.4	
	Evaluate the quality of different flour products based on texture, appearance and nutritional composition. • Organise an exhibition for learners to display their flour products. Evaluate the quality of different flour products based on: 1. Texture, 2. Appearance	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**

	3. Taste 4. Nutritional composition, etc. • Reflect feedback from the exhibition to improve the quality of your flour product.		
Teaching and Learning Materials	• Samples of flours • Videos • Pictures • Note pad and pens • Internet services • Charts • Computer	• Projector • Samples/pictures of basic ingredients- yeast/baking • powder/baking soda • Sugar • Fat • Flavourings • Cooking oil	• Internet services • ICT tools Pictures of basic ingredients used in flour cookery. Presentations in different modes • Large tables • Mixing bowls • Oven • Baking sheets • Rolling board and pin Palate knife Pictures of flour products, etc.

YEAR THREE

Subject **FOOD AND NUTRITION**
Strand 1 **NUTRITION AND HEALTH**
Sub-Strand 1 **FOOD FOR HEALTHY LIVING**

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
3.1.1.LO.1		
Explain the significance of Ghanaian festivals and festive occasions in promoting cultural identity, sustainable nutrition and healthy living.	**Critical thinking and problem-solving** • Use imagination and probing questions to make reasoned judgments • Use imagination, research and questioning skills on different ethnic groups and cultures to produce festive and festival dishes. **Communication and Collaboration skills** • Express their ideas during pair and group work. • Learn from and contribute to the learning of others. • Sharing ideas in group orally and in writing. • Respecting and accepting group members' contribution and giving positive feedback. **Digital literacy:** Watch videos, surfing the internet for examples of festive, festival foods and types of entertainment. **Personal development and Leadership skills:** • Take leading roles in group work and take responsibility for own learning. • Contribute to team discussions to reach a consensus on what action should be undertaken.	**GESI:** Learners having experienced a teaching approach that ensures gender equality and social inclusion, where they work with each other in an inclusive way; cross-sharing knowledge and understanding among groups and individuals lead them to: • Respect and appreciate individuals of different cultural backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/myths about gender as they relate to festive occasions and human development. • Assess their stereotypes and biases about gender and the role men and women play during festive occasions. • Identify injustice, especially in recognition of the contributions of different groups and individuals during festive occasions • Value and promote festive and festival dishes. **SEL:** Learners having been given the opportunity to experience varied teaching approaches in an enabling environment will be

	Cultural identity and Global Citizenship: • Open-minded and conscious of current global food issues and relating well with people from different cultural or ethnic groups. • Sharing ideas and experiences of different cultural dishes. Resourcefulness and teamwork among various groups.	equipped with social emotional learning skills to: • Manage thoughts and behaviours towards Ghanaian festival and festive dishes. • Use multiple options to communicate with each other on various festive/festival dishes. • Recognize commonalities and differences (e.g., racial, cultural) that exist among learners. • Demonstrate respect for diversity and find ways to share cultural backgrounds and experiences. **National Values:** • Tolerance • Friendliness • Open mindedness • Patience • Hard work • Humility
3.1.1.LO.2		
Plan and prepare nutritious special meals for different Ghanaian festive and entertainment occasions, considering health and sustainability principles.	**Critical Thinking and Problem-solving skills:** Analyse and apply creativity to plan suitable dishes for lifelong learning and to solve real life problems. **Communication and Collaboration skills:** Share ideas and teamwork in pairs, group activities and tolerating and respecting each other. **Creativity and Innovative skills:** Applying creativity to generate new ideas in planning meals for different occasions/functions.	**GESI:** Learners having experienced a teaching approach that ensures gender equality and social inclusion, where they work with each other in an inclusive way; cross-sharing knowledge and understanding among groups and individuals lead them to: • Respect the uniqueness of individuals of different backgrounds and skills. • Examine and dispel misconceptions/about male, female and SEN learners as they relate to meal preparation and services.

	Cultural identity and Global Citizenship: • Being aware of and able to prepare different ethnic and religious dishes • Open-minded and conscious of planning meals to meet different cultures or ethnic and religious groups. **Personal Development and Leadership skills:** Able to articulate and explain one's feelings in a group situation.	• Interrogate their stereotypes and biases about gender and the role men and women, adult and children play in meal preparation and services. • Sensitive to the food needs of individuals and groups in society. • Value and promote nutrition among all people. **SEL:** Learners having been given the opportunity to experience varied teaching approaches in an enabling environment will be equipped with social emotional learning skills to: • **Prepare, cook and serve** festive dishes for special occasions/events/functions. • **Evaluate and use a range of options for completing own work.** • Demonstrate respect for diversity and find ways to share cultural backgrounds and experiences with regards to food preparation and serving. **National Values**: • Tolerance • Friendliness • Open mindedness • Patience • Hard work • Humility

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century Skills and GESI	Assessment
3.1.1.CS.1	3.1.1.LI.1	3.1.1.AS.1
Demonstrate an understanding of the role of Ghanaian festivals and festive occasions in preserving culture, promoting sustainable nutrition and enhancing social well-being.	**Describe major Ghanaian festivals and their associated traditional foods.** **Problem based learning:** In mixed ability/gender/brainstorm/think-pair-share/think-pair-square-share explain the concepts of festivals and entertainment. Example: i. Festivals A special event or celebration that is organised to preserve cultural, religious or historical traditions. These activities bring different people together to honour their heritage, express gratitude and mark significant moments in life. ii. Entertainment, etc. Activities that provide relaxation, enjoyment and amusement. It plays a very important role in festivals as a way of expressing hospitality to promote excitement and attract large crowds, etc. **Talk for Learning/Problem based learning:** In mixed ability/gender groups with the aid of posters, pictures, videos and concept maps, brainstorm/think-square-share to describe the major Ghanaian festivals and their associated traditional foods. Example: a. Types of festivals: i. Religious Festivals: Celebrated to honour deities, spiritual beliefs and religious teachings like Eid-ul-Fitr, Christmas, Easter and Damba Festival, etc. ii. Cultural Festivals: Rooted in traditions, customs and heritage of a particular ethnic group such as Homowo, Hogbetsotso, Aboakyer, Odwira Festival and Akwasidae Festival etc. iii. Harvest Festivals: Held to give thanks for a successful farming season and to promote food security such as Yam Festival, Paragbiele Festival, Kakube Festival and Kundum Festival, etc. iv. National Festivals: Mark historical or national events that are significant to a country's history such as Independence Day, Republic Day, Founders' Day, Kwame Nkrumah Memorial Day and Farmers' Day, etc.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	b. Forms of Entertainment commonly found at Festivals: i. Music and Dance: Traditional drumming, singing and dancing such as Kete, Adowa, Agbadza and Bawa, etc. ii. Drama and Storytelling: Theatrical performances and folktales that educate and entertain. iii. Games and Competitions: Wrestling, boat racing or beauty pageants associated with some festivals. iv. Feasting and Food Displays: Sharing traditional meals to promote communal living, etc. c. Importance of Entertainment: i. Social bonding: Strengthens social and cultural ties by bringing people together, fostering social bonds and community building. ii. Cultural exchange: Preserves indigenous art forms and creativity to promote cross-cultural activities and understanding. iii. Stress relief: Provides an opportunity for relaxation and stress relief to make people happy and reduces anxiety, depression and improve mood. iv. Entertainment promotes critical thinking, problem solving and creativity. v. Enhances the festive mood and attracts tourists to promote economic benefits through job creation in the entertainment and hospitality industry, etc. d. Traditional significance of festivals. i. Preserve cultural identity and heritage. ii. Promote social unity and community bonding. iii. Enhance economic activities through tourism and trade. iv. Encourage sustainable food consumption and showcase traditional meals. v. Provide a platform for entertainment and relaxation **Group Work:** In mixed gender/ability/friendship groups, use think-pair-share to outline factors that should be considered when selecting and organising entertainment. Example: Factors to consider when selecting and organising festivals and festive entertainment at events. Example: i. Target audience ii. Purpose of the event iii. Budget and financial resources iv. Safety and security	

	v. Publicity and invitations vi. Sustainability and environmental impact, etc. **Homework/Extended Learning**: Reading assignment: find out factors that contribute to the success of a party and report in class for further discussion.	
	3.1.1.LI.2	3.1.1.AS.2
	Analyse the role of traditional foods in promoting sustainable nutrition and their impact on healthy living. **Problem-Based Learning /Collaborative Learning**: • In mixed cultural/gender groups, with aid of videos, posters and sample recipes of festival and festive dishes, analyse the role of traditional foods in promoting sustainable nutrition and their impact on healthy living. • Develop concepts to compare traditional festive meals with modern adaptations, focusing on health benefits and sustainability. • In your groups work suggest healthy modifications to traditional festive meals while maintaining their cultural significance. Example: a. Cultural Significance of Festival Foods in Ghana i. Preservation of cultural heritage ii. Symbolism and Rituals iii. Community Bonding and Unity, etc. b. Nutritional Significance of Festival Foods i. Balanced Diet and Nutrient Diversity: ii. Use of Indigenous and Organic Ingredients: iii. Energy-Boosting Foods for Festival Activities: c. Health Significance of Festival Foods i. Medicinal and Healing Properties: ii. Role in Disease Prevention: iii. Considerations for Modern Health Challenges iv. Modern adaptations of traditional recipes, etc. • Present your findings for a whole discussion.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**

	3.1.1.LI.3	3.1.1.AS.3
	Analyse how traditional festive meals can be modified for improved health benefits and sustainability **Problem-Based Learning:** • In mixed ability/gender groups brainstorm/think-/think-pair-square-share to design a balanced and sustainable menu for a selected festival of your choice. Example: a. Components of the meal i. Starter ii. Main Dish iii. Side Dish iv. Beverage v. Dessert b. Sustainability Considerations i. Locally Sourced Ingredients: Reduces carbon footprint and supports local farmers. ii. Minimal Food Waste: Leftovers can be repurposed into other meals. iii. Eco-Friendly Cooking Method: Uses traditional steaming, boiling and roasting. iv. Healthy Adaptations: Reduces excess salt and oil while retaining cultural authenticity. v. Experiential Learning/Talk for Learning: vi. Watch a demonstration to discuss how to incorporate local and seasonal ingredients to ensure food sustainability. • Presentations of planned menus with justification for selected dishes. • **Describe festive and festival dishes** Example: i. Festive dishes are dishes prepared to celebrate happy occasions which call for feasting to befit the importance of the celebration. These dishes include: Chicken Jollof rice, oto with egg, T.Z and groundnut soup, etc. ii. Festival dishes: They are dishes prepared during festivals of ethnic groups, sometimes using especial ingredients and utensils. These include: oto with egg, rice porridge, kpokpoi and Tunbani, etc.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	Group Work: In mixed gender groups, use think-pair-share to identify the various special occasions/events we observe or celebrate. Example: i. Easter ii. Christmas iii. Ramadan iv. Birthday v. Wedding vi. Graduation vii. Funerals viii. Homowo ix. Kundum x. Aboakyere xi. Damba xii. Hogbetsotso **Collaborative/talk for learning:** In mixed ability/gender groups explain the history of festival dishes. Example: "homowo", "damba", "aboakyire", "bakatua" etc.	
	3.1.1.LI.4	3.1.1.AS.4
	Examine the social and communal benefits of festive and festivals dishes in strengthening relationships and enhancing overall well-being. **Problem based learning:** • In mixed ability/gender/ethnic/religious/random groups, discuss festival dishes. Example: Festival dishes: i. Kpokpoi and palmnut soup ii. Akple and okro soup iii. Rice porridge • In a mixed ability/gender/ethnic/religious/random groups, discuss festive dishes.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**

	Example: Festive dishes: i. Cakes ii. Jollof rice iii. Fries with sauces **Group work/ Collaborative learning:** In mixed ability/gender/ethnic/religious/ random groups, discuss the reasons/importance of festive and festival dishes. **Experiential Learning:** In mixed ability/gender/ethnic/religious/random groups, watch videos, pictures, read text, interview people in the community and share history behind preparation of festive/festival dishes.		
Teaching and Learning Materials	• Pictures • Videos • Samples of dishes	• Computers • Projectors • Mobile phones (if possible)	• Note pads • Resource person • Read text

<table>
<tr><th>Content Standards</th><th>Learning Indicators and Pedagogical Exemplars with 21st Century Skills and GESI</th><th>Assessment</th></tr>
<tr><td>3.1.1.CS.2</td><td>3.3.1.LI.1</td><td>3.1.1.AS.1</td></tr>
<tr><td rowspan="3">Demonstrate skills in modifying and preparing festival and festive meals for special occasions, events, and entertainment.</td><td>Plan festive and festivals meals suitable for various occasions /events.

Problem based learning: In mixed ability/gender/ethnic/religious/random groups, share experiences on the various festive/festival dishes and how they are prepared for various occasions or events.

Group work/ Collaborative learning: In mixed ability/gender/ethnic/religious/random groups, use concept maps to plan suitable meals for various occasions or events for a presentation.

Group Work: In mixed ability/gender/ethnic/religious/random groups, discuss the following functions and indicate when they are used.
Example:
i. Dinners
ii. Cocktails
iii. Luncheon
iv. Tea parties</td><td>Level 1 Recall
Level 2 Skills of conceptual understanding
Level 3 Strategic reasoning
Level 4 Extended critical thinking and reasoning</td></tr>
<tr><td>3.1.1.LI.2</td><td>3.1.1.AS.2</td></tr>
<tr><td>Prepare and cook dishes for festive/festivals/occasions/events.

Experiential/project-based learning: In mixed ability/gender/ethnic/religious/random groups, prepare, cook and serve meals for various occasions or events.

Talking for learning/Collaborative learning: In mixed ability/gender/ethnic/religious/random groups, display cooked festive dishes for gallery walk and appraisal and give and receive feedback.</td><td>Level 1 Recall
Level 2 Skills of conceptual understanding
Level 3 Strategic reasoning
Level 4 Extended critical thinking and reasoning</td></tr>
<tr><td>Teaching and Learning Materials</td><td>• Pictures
• Videos
• Computers</td><td>• Read text
• Projectors
• Mobile phones (if possible)</td><td>• Note pads.
• Manila cards</td></tr>
</table>

Subject FOOD AND NUTRITION
Strand 1. NUTRITION AND HEALTH
Sub-Strand 2. FOOD SECURITY

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
3.1.2.LO.1		
Apply suitable packaging methods to preserve the nutritional value and safety of food products.	**Presentation skills:** • Use different modes of presentation efficiently. • Speak clearly to convey thoughts to a wider group. **Creativity, innovation and resourcefulness**: Develop different and new ways of preserving food. **Critical thinking:** Think rationally and analyse how local and modern technologies are used to preserve food commodities. **Communication and collaboration:** Share ideas using constructive critiquing and feedback in group discussions. **Self-directed learning:** • Take active part in group discussions. • Ask probing and relevant questions to check and build understanding. **Entrepreneurial skills:** Preserve and use marketing strategies to sell products.	**GESI:** Learners having experienced a teaching approach that ensures gender equality and social inclusion, where they work with each other in an inclusive way; cross-sharing knowledge and understanding among groups and individuals lead them to: • Respect individuals of different backgrounds with regards to food preservation. • Embrace diversity and practice inclusion. **SEL:** Learners having been given the opportunity to experience varied teaching approaches in an enabling environment will be equipped with social emotional learning skills to: • Demonstrate respect for diversity and share cultural background experiences with regards to food preservation. • Apply knowledge to solve real-world problems and issues related to food preservation. • Develop strategies to complete a task or learn a new concept.

		National Values: • Tolerance • Friendliness • Open mindedness • Patience • Hard work • Humility
3.1.2.LO.2		
Apply entrepreneurial skills in food production to promote healthy eating and sustainable nutrition practices.	**Communication and collaboration** • Understand and respect the needs, perspective and actions of others (empathy). • Share ideas, Understand and respect the needs, perspective and actions of others (empathy). • Speak clearly and convey simple answers or thoughts **Critical thinking and problem solving** Seek additional information to build their understanding of a complex problem. **Creativity and innovation** Use local resources to produce some preserves using scientific principles. Combine ideas or concepts to package preserves using scientific principles to ensure food safety and security **Self – directed learning** • Take part in the preparation of preserves. • Probe to check ideas and understanding.	**GESI:** Learners having experienced a teaching approach that ensures gender equality and social inclusion, where they work with each other in an inclusive way; cross-sharing knowledge and understanding among groups and individuals lead them to: • Respect individuals of different backgrounds with regards to food preservation. • Embrace diversity and practice inclusion. **SEL:** Learners having been given the opportunity to experience varied teaching approaches in an enabling environment will be equipped with social emotional learning skills to: • Demonstrate respect for diversity and share cultural background experiences with regards to food preservation. • Apply knowledge to solve real-world problems and issues related to food preservation and packaging. • Develop strategies to complete a task or learn a new concept.

		National Values: • Tolerance • Friendliness • Open mindedness • Patience • Hard work • Humility

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century Skills and GESI	Assessment
3.1.2.CS.1	3.1.2.LI.1	3.1.2.AS.1
Demonstrate knowledge and skills in appropriate packaging techniques to maintain the nutritional quality and safety of food products.	**Explain the role of food packaging in maintaining nutritional quality, hygiene and food safety.** **Talk for Learning/Collaborative Learning:** In mixed ability/gender groups, brainstorm the concept food packaging and its purpose in food production. Example: Food packaging: Meaning: The process of enclosing or wrapping food products in materials designed to protect, preserve and enhance their safety, quality and shelf-life. Purpose: It serves as a barrier against physical, chemical and biological factors that may affect the food's freshness, nutritional value and hygiene. i. Protection and preservation ii. Convenience iii. Food safety and hygiene iv. Extending shelf life v. Marketing and consumer appeal vi. Communication and Information vii. Sustainability and environmental considerations, etc. **Experiential Learning Approach:** In pairs brain-write to explain the role of food packaging in maintaining nutritional quality, hygiene and food safety with the aid of posters, pictures and sample food packaging. Example: i. Role of Food Packaging ii. Maintaining nutritional quality iii. Food packaging helps preserve the essential nutrients in food by protecting it from external factors that can lead to nutrient degradation. iv. Prevention of nutrient Loss v. Barrier against environmental factors vi. Retention of freshness and flavour, etc.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	Ensuring hygiene: Food packaging plays a critical role in maintaining hygiene by preventing contamination from external sources. i. Protection Against Microbial Contamination ii. Prevention of Physical Contaminants iii. Minimising Human Contact, etc. Enhancing food safety: Food packaging helps ensure that food remains safe for consumption throughout its storage and distribution. i. Extending Shelf Life ii. Proper Labelling and Consumer Information iii. Tamper Resistance and Food Security iv. Use of Smart and Active Packaging, etc. **Experiential Learning/Talk for Learning:** In your groups watch videos/or use real-life scenarios to identify the types of food packaging materials used in households and the food industry. Types of food packaging materials: Food packaging materials vary based on their properties, intended use and effectiveness in preserving food. Plastic packaging i. Household use: Used for food storage containers, plastic wraps, resealable bags and bottles. ii. Food industry use: Used for vacuum-sealed packs, disposable food containers and beverage bottles. iii. Advantages: Lightweight, flexible, moisture-resistant and cost-effective. iv. Disadvantages: Can contribute to environmental pollution if not properly disposed of, etc. Metal packaging: i. Household use: Used for aluminum foil and reusable food tins. ii. Food Industry Use: Used for canned foods, soft drink cans and foil packaging. iii. Advantages: Provides an excellent barrier to light, air and moisture to extends shelf life.	

	iv. Disadvantages: Can corrode if not coated properly and may react with acidic foods, etc. Paper and cardboard packaging: i. Household Use: Used for paper bags, baking parchment and takeaway food containers. ii. Food Industry Use: Used for dry food packaging, fast-food containers and milk cartons coated with wax or plastic. iii. Advantages: Biodegradable, recyclable and lightweight. iv. Disadvantages: Less durable and not moisture-resistant unless coated, etc. **Managing Talk for Learning approaches:** In pairs, share your experiences to discuss the food labelling and Its importance. Example: Food labelling: The information displayed on packaged food products provide details about the product's contents, ingredients, nutritional value and safety guidelines. Food labels are essential for consumers to make informed choices and ensure food safety. Components of food labels i. Product name ii. Ingredients list iii. Nutritional information iv. Allergen information v. Expiration date vi. Storage instructions vii. Manufacturer details viii. Food additives and preservatives, etc. Importance of food labelling i. Ensures food safety ii. Aids in nutritional awareness iii. Prevents allergic reactions iv. Supports informed consumer choices v. Helps in weight and health management vi. Provides legal compliance	

	vii. Enhances market confidence, etc. • Group present their findings using different forms of presentation. *Note: Learners, use different ways/modes of presentations such as: oral presentations, audio and videotape productions, photographic, written report.*	
	3.1.2.LI.2	3.1.2.AS.2
	Apply appropriate eco-friendly packaging methods to enhance food preservation and minimise waste. **Experiential Learning Approach**: • In mixed ability/gender groups, observe videos/ visit a food production industry or listen to a talk by food experts on food packaging to identify eco-friendly packaging methods that are used to enhance food preservation and minimise waste. Example: Eco-Friendly Packaging Methods i. Biodegradable and compostable packaging ii. Edible packaging iii. Beeswax wraps iv. Glass containers and jars v. Recyclable and reusable packaging vi. Plant-based bioplastics vii. Minimalist packaging, etc. • In your groups, use the diamond nine strategy to discuss the importance of eco-friendly packaging materials. Example: Importance of eco-friendly packaging i. Reduces plastic pollution: Minimises the use of single-use plastics that contribute to environmental degradation. ii. Enhances food shelf life: Sustainable packaging materials like beeswax wraps and glass jars help preserve food longer. iii. Supports sustainable practices: Encourages consumers and businesses to adopt waste-reducing habits.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	iv. Promotes consumer health: Reduces exposure to harmful chemicals found in conventional packaging. v. Encourages recycling and reusability: Lowers the demand for raw materials and energy consumption, etc. **Project-Based Learning/Collaborative Learning:** Organise an activity to engage learners in a demonstration of activities to explore creative ways of designing, developing and using suitable packaging for their food product for exhibition and marketing. Designing Eco-Friendly Food Packaging: i. Materials Needed: Recycled cardboard, biodegradable wraps cloth bags, beeswax wraps, twine, glue, scissors and markers. ii. Procedure: iii. Assign groups a food product to be packaged iv. Ask groups to design a prototype package using eco-friendly materials. v. Ensure the design includes labelling elements such as product name, expiration date, storage instructions, etc. vi. Groups present their designs and justify their material choices. **Problem-Based Learning/Group Work:** • In your groups, conduct a test for durability of the packaging. Example: i. Drop test ii. Moisture resistance iii. Stacking ability, etc. • Evaluate functionality of the package to protect the food and maintain freshness. **Project-Based Learning:** • In panel discussion, groups reflect on feedback information to modify their designs based on test results. • Guide groups to design creative labels for their food packages. • Discuss how colours, fonts and images influence consumer choices.	

	• Present your packaging designs and branding strategies for peer and teacher assessment. **Experiential/Collaborative Learning:** • In your groups organise and set up a classroom exhibition to display your packaging. • Invite your peers, teachers and/or industry experts to evaluate designs. • Explain your choices of materials and design features. • Provide an award scheme to recognise and award the most sustainable, innovative and practical packaging to motivate learners. **Talk for learning approaches:** In mixed ability/gender groups, think-pair-square-share your experience, achievement and challenge in designing and developing eco-friendly food packaging materials.	
Teaching and Learning Materials	• Print and digital materials • Visual and interactive tools • Practical materials and equipment • Financial calculator / spreadsheet software (Excel, Google Sheets) for real-time calculations • Whiteboard and markers for drawing cost-volume-profit graphs • Business simulation software to practice cost analysis in a virtual setup • Case study scenarios • Guest Speakers and Industry Visits • Internet services	• Computers • Projector • Videos • Pictures • Charts and realia (sample packaged foods) • Sample food commodities • Charts • Posters on food products • Product labels.etc.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century Skills and GESI	Assessment
3.1.2.CS 2	3.1.2.LI.1	3.1.2.AS.1
Develop entrepreneurial skills in creating and marketing nutritious food products that promote healthy living practices.	**Identify business opportunities in food production that support healthy eating habits and sustainable nutrition.** **Talk for Learning:** • In a whole class discussion mingle to find someone and explain the concept of business. • In mixed gender/cultural/random groups think-pair-square-share to reflect on ideas received in the mingling activity to explain the meaning of business and its importance. Example: Concept of food and nutrition Business: Food and nutrition business: Any enterprise that focuses on the production, processing, distribution and sale of food products while ensuring they meet nutritional and quality, safety and health standards. Food and nutrition businesses range from: i. Agricultural food production ii. Food processing industries iii. Food retail and distribution iv. Catering and hospitality services v. Nutrition consulting and dietetics, etc. Importance of food and nutrition businesses to sustainable development Food and nutrition businesses contribute to sustainable development as they help address the United Nations' Sustainable Development Goals (SDGs), particularly: i. SDG 2: Zero Hunger ii. SDG 3: Good Health and Well-being iii. SDG 8: Decent Work and Economic Growth iv. SDG 12: Responsible Consumption and Production, etc. Economic Importance: i. Job creation and economic growth Promotes entrepreneurship ii. Revenue generation	Level 1 Recall Level 2 Skills of conceptual understanding Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**

	iii. Encourages International Trade, etc. Social Importance: i. Food security and accessibility ii. Improves public health iii. Provides nutrition education and awareness iv. Supports women and youth empowerment, etc. Environmental Importance i. Encourages Sustainable Food Production ii. Reduces Food Waste iii. Supports Climate Action, etc. **Experiential/collaborative learning:** In mixed gender/ability groups, surf the internet and other sources to identify business opportunities in food production that support healthy eating habits and sustainable nutrition. The growing demand for healthy and sustainable food options presents numerous business opportunities in food production. i. Organic and natural food production ii. Plant-based and alternative protein foods iii. Functional and fortified foods iv. Eco-friendly food packaging solutions v. Healthy snack production vi. Food waste reduction initiatives vii. Sustainable Beverage Production viii. Educational services on healthy eating and food sustainability, etc. **Experiential Learning/Project-Based Learning:** • Guide learners to individually, identify a business idea to develop a business concept and develop a business plan. • In a whole class discussion, use the panel discussion strategy to share their business feedback. • Reflect on information received from the feedback to modify your business if necessary. • Present your business for peer and teacher assessment. Example:	

	i. Business idea ii. Business concept iii. Business plan development o Business objectives o Market analysis o Product line o Production plan o Marketing and sales strategy o Financial plan o Sustainability and expansion plan, etc. ***Values:*** *Discuss the value of love, honesty, truthfulness in the use of additives. Do not use unwholesome ingredients to prepare preserves for sale or consumption.*	
	3.1.2.LI.2	3.1.2.AS.2
	Develop, package and market a nutritious food product that aligns with consumer health needs and industry standards. **Experiential Learning/Project-Based Learning:** Practical Activities: Based on your personal business plan, develop, package and market your food product following quality and safety principles and standards. **Experiential/collaborative learning:** • In mixed gender/ability groups, surf the internet and other sources to conduct the breakeven analysis and evaluate the performance of your businesses. Break-even Analysis i. Identifying Cost Components ii. Fixed Costs iii. Variable Costs iv. Break-even Point Calculation v. Evaluating Business Performance vi. Recommendations • In a whole class discussion, using the talking strategy, present your business experience, achievement and challenges.	Level 1 Recall Level 2 Skills of conceptual understanding Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**

Teaching and Learning Materials	• Print and digital materials • Visual and interactive tools • Practical materials and equipment • Financial calculator / spreadsheet software (Excel, Google Sheets) for real-time calculations • Whiteboard and markers for drawing cost-volume-profit graphs • Business simulation software to practice cost analysis in a virtual setup • Case study scenarios • Guest Speakers and Industry Visits • Internet services	• Computers • Projector • Videos • Pictures • Charts and realia (sample packaged foods) • Sample food commodities • Charts • Posters on food products • Product labels.etc.

Subject FOOD AND NUTRITION
Strand 2. FOOD PRODUCTION
Sub-Strand 1. FOOD PRODUCTION TECHNOLOGY

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
3.2.1.LO.1		
Apply creative and innovative principles and skills in sugar craft to decorate a variety of confectionery products.	**Communication and Collaboration skills:** • Think rationally and clearly to present ideas. • Share learning, question and evaluate each other's ideas respectfully. **Critical thinking and problem-solving skills:** • Think creatively and make reasonable judgments to come out with the different types and uses of sugar and sweeteners. • Apply innovative and creative skills in decorating flour products for different occasions/events/functions. **Digital literacy skills:** Develop a strong passion and understanding of how to confidently use ICT tools to surf information from the internet and do presentations. **Personal development and Leadership skills:** • Exhibit character qualities such as integrity. • Demonstrate tolerance, self-esteem adaptability and empathy for people of diverse ethnic and cultural backgrounds. **Communication and collaboration skills:** • Share ideas in groups orally or written. • Respectfully accept ideas from group members	**GESI:** Learners having experienced a teaching approach that ensures gender equality and social inclusion, where they work with each other in an inclusive way; cross-sharing knowledge and understanding among groups and individuals lead them to: • Respect the influence of individuals of different backgrounds in confectionary industries. • Promote diversity and practice inclusion. • Examine and dispel misconceptions/myths about gender as they relate to creative and innovative skills in sugar craft. • Interrogate their stereotypes and biases about gender and the role men and women play in the sugar craft business. • Be sensitive to the health implications in the use of sugars. • Value and promote the production and use of confectionary products. **SEL:** Learners having been given the opportunity to experience varied teaching approaches in an enabling environment will be equipped with social emotional learning skills to:

		• Use skills in sugar craft to decorate varied confectionery products. • Evaluate their own work. • Use a range of options for completing their work. • Demonstrate respect for diversity and share cultural backgrounds and experiences with regards to confectionary products and decorations. **National Values:** • Tolerance • Friendliness • Open mindedness • Patience • Hard work • Humility
3.2.1.LO.2		
Apply scientific principles to develop and modify recipes that enhance nutritional value, sensory appeal and overall food quality.	**Communication skills and collaboration:** • Share ideas in groups orally or written. • Respect and accepting ideas from group members • Share and evaluate each other's ideas respectfully • Ask questions, learn from peers and extend own knowledge and build on own ideas. • Share ideas, knowledge or make connection with what they learn in teamwork, respect and accept ideas from group members. **Personal development and Leadership skills:** • Demonstrating tolerance, self-esteem adaptability and empathy for people of diverse ethnic and cultural background. • Apply knowledge or make connections with what is learnt.	**GESI:** Learners having experienced a teaching approach that ensures gender equality and social inclusion, where they work with each other in an inclusive way; cross-sharing knowledge and understanding among groups and individuals lead them to: • Acknowledge individuals of different backgrounds and skills in recipe development. • Respect diversity. • Demonstrate interest in recipe developments for different occasions in life. **SEL:** Learners having been given the opportunity to experience varied teaching

	Critical thinking and problem-solving skills: Apply innovative and creative skills to improve existing and extinction recipes. **Creativity and Innovation:** • Ability to create new and innovative cake designs. • Doing things in new ways that extend learners learning. Displaying originality in creating new products. **Cultural identity and Global Citizenship:** Open-minded and conscious of exploring existing and extinct recipes from different cultures or ethnic groups.	approaches in an enabling environment will be equipped with social emotional learning skills to: • Reflect on positive and negative choices of food and nutritional needs of families and societies. • Make decision-making roles in the development of recipes. • Work to create an environment in which learners believe that their thoughts and opinions are valued. **National Values**: • Tolerance • Friendliness • Open mindedness • Patience • Hard work • Humility

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century Skills and GESI	Assessment
3.2.1.CS.1	3.2.3.LI.1	3.2.3.AS.1
Demonstrate knowledge and understanding of sugars and apply creative and innovative sugar craft techniques to enhance the appearance and quality of confectionery products.	**Discuss the types, properties and functions of sugars/sweetener in food production and sugar craft.** **Problem based learning:** In mixed ability/gender/friendly/random groups, brainstorm on the various types of sugars/sweeteners used in everyday life. Example: i. Granulated – castor (white), demerara (brown), stevia. ii. Cubes - castor (white), demerara (brown), iii. Liquid – honey, molasses, maple syrup, agave nectar, dates syrup, glucose syrup, iv. Powder – icing sugar, date powder, glucose **Experiential/project-based learning:** In mixed ability/gender/friendly/random groups, explore the effects of heat on sugar. Example: i. Moist heat – syrup – golden syrup – caramel – treacle. ii. Dry heat – caramel – treacle. **Group work/ Collaborative learning:** • In mixed ability/gender/friendly /random groups: • Discuss the uses of sugars and sweeteners. • Describe the effects of heat on sugar. *Note: Stress the values of honesty, love, truthfulness by not using saccharin instead of sugar in making bread.*	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**
	3.2.1.LI.2	3.2.1.AS.2
	Demonstrate the application of creative and innovative sugar craft techniques to design and decorate confectionery products. **Problem based learning:** In mixed ability/gender/friendly/random groups, discuss the various types of icing and their uses in sugar craft. Example:	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning**

	i. Sugar paste (fondant) ii. Butter iii. Royal iv. Glace v. Whipped cream **Experiential learning:** In mixed ability/gender/friendly/random groups, visit cake decorating shops/surf the internet/watch videos/view pictures to explore the various ways of creatively decorating flour products and report during class discussion. **Group work/ Collaborative learning:** In mixed ability/gender/friendly/random groups, prepare different types of icing and apply creative skills to decorate flour products for different occasions/functions for appraisal.	**Level 4 Extended critical thinking and reasoning**
Teaching and Learning Materials	• Samples of sugars and sweeteners • Pictures • Videos • Computers • Text	• Projectors • Mobile phones (if possible) • Note pads • Samples of icing sugar • Pictures and videos of flour products decorated and used in occasions/functions.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century Skills and GESI	Assessment
3.2.1.CS.2	3.2.1.LI.1	3.2.1.AS.1
Demonstrate knowledge, understanding and skills in the application of scientific principles in developing recipes.	**Explain the scientific principles involved in recipe development.** **Talk for learning:** In mixed ability/gender/ friendly/cultural /random groups, share experiences on different ethnic recipes. Example: i. Soups ii. Sauce iii. Puddings iv. Cookies v. Breakfast cereals, etc. **Group work/ Collaborative learning:** In mixed ability/gender/friendly/ cultural /random groups, Building on what others say strategy, explain the scientific principles involved in recipe development. Example: Scientific principles in recipe development Recipe development is a systematic process that combines food science, culinary techniques and principles to create balanced, flavoured and safe meals. a. Ingredient Interactions in Recipe Development i. Protein interactions ii. Carbohydrate interactions iii. Fat interactions iv. Acid-base interactions, etc. nutrition b. Cooking methods and their scientific principles. i. Moist heat cooking (Uses Water or Steam) ii. Dry heat cooking (Uses Air, Fat, or Radiation) iii. Combination cooking (Moist + Dry Heat), etc. c. Importance of Recipes in Cooking and Food Preparation i. Standardisation and consistency	Level 1 Recall **Level 2 Skills of conceptual understanding** Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**

	ii. Nutritional balance iii. Food safety and hygiene iv. Innovation and creativity v. Cost-Effectiveness etc. Example: **Importance of recipes** i. Helps to balance meals ii. It caters for specific dietary needs of individuals. (Diabetics, hypertensives, vegan, gluten - free) iii. Recipes that preserve traditional cooking methods iv. Recipes that strengthen family bonds – it passes from generation to generation. v. It is for social activities through social gatherings, meals and celebrations vi. Recipes help to reduce food waste during food preparations. Etc **Experiential Learning:** In mixed ability/gender/friendly/cultural /random groups, interview members of the community on ethnic recipes and present reports in class for a whole class discussion about ethnic recipes in Ghanaian communities. Example: Soups i. Light soup (Nkrakra): Akan (Ashanti, Fante, Akuapem, Akyem, Kwahu, etc. ii. Groundnut soup (Nkatekwan): Akan, Ewe, Ga-Dangme, Northern Ghana iii. Palm nut soup (Abenkwan): Akan, Nzema, Ga-Dangme iv. Ayoyo soup: Northern Ghana (Dagombas, Frafras, Gonjas), etc. Sauces i. Shito (Black Pepper Sauce): Ga-Dangme, Akan, Ewe ii. Tomato Stew: Akan, Ga-Dangme, Ewe, Northern Ghana iii. Kontomire Stew (Palava Sauce): Akan, Ewe, etc. Puddings i. Abolo (Steamed Corn Pudding) – Ewe ii. Akple (Fermented Corn Dumpling) – Ewe, Ga-Dangme iii. Oto (Mashed Yam with Palm Oil) – Akan (Fante, Ashanti, Akuapem), etc. Cookies i. Atwemo (Traditional Ghanaian Biscuits) – Akan ii. Nkatie Cake (Peanut Brittle) – Akan, Ga-Dangme, Ewe	

	iii. Agbeli Kaklo (Cassava Balls) – Ewe, etc. Breakfast cereals i. Tom brown (Roasted Cereal Mix) – Akan, Ga-Dangme, Ewe, Northern Ghana ii. Koko (Fermented Porridge) – Akan, Ewe, Ga-Dangme, Northern Ghana iii. Rice water (Rice Porridge) – Akan, Ga-Dangme, Ewe, etc.	
	3.2.1.LI.2	3.2.1.AS.2
	Develop and modify recipes using scientific principles to improve taste, texture, nutritional content and presentation. **Experiential/Problem based learning:** • In mixed ability/gender/friendly/ cultural /random groups, surf the internet or interview community members to find out extinct recipes, reasons for extinction. • In a whole class discussion present your findings and share your experiences on extinction recipes. **Group work/ Collaborative learning:** In mixed ability/gender/friendly/ cultural/random groups, discuss methods of improving existing and extinction ethnic recipes. Example: **ways of improving dishes** i. Methods of preparation ii. Nutritional values iii. Time and energy use iv. Serving food/ food presentation. **Talk for learning/Project base learning:** In mixed ability/gender/friendly/ cultural /random groups, experiment on how to improve existing and extinction ethnic recipes and present dishes for appraisal. **Experiential/Problem based learning:** • In mixed ability/gender/friendly/ cultural /random groups, demonstrate how to use réchauffé/leftover dishes to create new recipes.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**

	• In mixed ability groups surf the internet for information to discuss the rules for using réchauffé/ leftover dishes. Rules for using réchauffé/leftover dishes i. Store left overs properly ii. Reheat safely iii. Combine with fresh ingredients iv. Adapt new cooking methods v. Avoid overheating vi. Be mindful of storage duration, etc.		
Teaching and Learning Materials	• Recipe books • Resource people • Food production units in the community • Pictures • Videos	• Computers • Projectors • Mobile phones (if possible) • Note pads	

Subject FOOD AND NUTRITION
Strand 2. FOOD PRODUCTION
Sub-Strand 2. FOOD PROCESSING TECHNIQUES

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
3.2.2.LO.1		
Plan, organise and manage food exhibitions and bazaars to be used as marketing strategies to showcase food products. Create entrepreneurial opportunities for engaging consumers and promoting food innovations.	**Entrepreneurial skills:** Use available resources to package food products and market them. **Critical thinking and problem-solving skills:** • Apply innovative and creative ways of developing and designing appealing and original packaging for food products. • Demonstrate the ability to promote good work ethics and live peacefully and in harmony with different groups of individuals at the workplace. • Learn from and contribute to the learning of others. • Apply knowledge and make connections to real life situations. **Communication and Collaboration skills:** **Personal development and Leadership skills:** • Ability to assign roles to promote teamwork, respect and accepting ideas from group members. • Demonstrating tolerance, self-esteem, adaptability and empathy for people of diverse ethnic and cultural backgrounds. **Cultural identity and Global Citizenship:** • Open-minded and conscious of interacting with different individuals during marketing of food products. • Open-minded and conscious of interacting with different individuals from different cultural or ethnic groups and in workplaces.	**GESI:** Learners having experienced a teaching approach that ensures gender equality and social inclusion, where they work with each other in an inclusive way; cross-sharing knowledge and understanding among groups and individuals lead them to: • Appreciate teamwork and respect individuals of different backgrounds. • Examine and dispel misconceptions/myths about the food industry. • Investigate the stereotypes and biases about gender/culture that affect the management of the food industry. • Identify injustice, especially in recognition of the contributions of different groups and individuals to the effective development and management of the food industry. **SEL:** Learners having been given the opportunity to experience varied teaching approaches in an enabling environment will be equipped with social emotional learning skills to: • Demonstrate respect for diversity and share cultural backgrounds and experiences with regards to packaging resources.

	Creativity and Innovation skills: Display products creatively, innovatively and appealingly. **Digital literacy:** Observe videos, pictures and be able to use ICT tools in presentation.	• Apply knowledge, skills and resources in packaging finished foods and make it marketable. • Develop strategies to complete a task or learn a new concept. • Evaluate own and others work • Build self-confidence. **National Values**: • Tolerance • Friendliness • Open mindedness • Patience • Hard work • Humility

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century Skills and GESI	Assessment
3.2.2.CS.1	3.2.2.LI.1	3.2.2.AS.1
Demonstrate the ability to plan, organize, and manage food exhibitions and bazaars to promote food products and develop entrepreneurial and career opportunities.	**Plan and organise a food exhibition or bazaar to showcase newly developed food products to target consumers.** **Problem based learning:** In mixed ability/gender/ friendly/cultural /random groups, discuss the concept of exhibitions and food bazaars and their functions in the food industry. Example: i. Exhibitions: A food exhibition is an organized event where food businesses, manufacturers, chefs and entrepreneurs showcase their products, innovations and culinary skills to the public. These events provide a platform for networking, brand promotion, product testing and consumer feedback. ii. Food Bazaar: A food bazaar is a market-like event where various food vendors set up stalls to sell diverse food products, including traditional and modern cuisines, baked goods and beverages. It is a community-centered event designed to encourage entrepreneurship, cultural exchange and food appreciation. **Experiential Learning/Group work/ Collaborative learning:** • In mixed ability/gender/friendly/cultural /random groups observe videos or listen to a guest speaker to: 1. Identify the types of exhibitions and food bazaars Example: Types of Exhibitions in the Food Industry i. Trade Exhibitions ii. Consumer Food Exhibitions iii. Product-Specific Exhibitions iv. Cultural and Ethnic Food Exhibitions v. Culinary Competitions and Food Shows, etc. Types of Food Bazaar: i. Street Food Bazaars ii. Seasonal and Holiday Food Bazaars iii. Charity and Fundraising Food Bazaars iv. Themed Food Bazaars v. Health and Wellness Food Bazaars, etc.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**

	• Discuss factors that influence the planning of exhibitions and food bazaars in the food industry. Example: i. Objectives and Purpose of the Event ii. Target Audience iii. Venue Selection iv. Budget and Funding v. Licensing and permits, etc. The importance of exhibitions and food bazaars in the market space. i. Promotes business growth and market expansion ii. Encourages entrepreneurship and innovation iii. Enhances food safety and quality standards iv. Creates awareness of local and traditional foods v. Boosts consumer engagement and education, etc. vi. Digital marketing – social media, influencer partnership (using celebrities, bloggers to promote food products) vii. Experiential marketing – food festivals, testing free samples, cooking class/workshops/demonstrations. viii. Packaging and Branding – eye catching packaging, labeling, certification ix. Partnership and collaborations – food delivery services. Etc.	
	3.2.2.LI.2	3.2.2.AS.2
	Apply marketing and promotional strategies to attract consumers and enhance the visibility of food products. **Problem based learning:** In mixed ability/gender/friendly /random groups, brainstorm/brain write marketing and promotional strategies that can be employed to attract consumers and enhance the visibility of food products in an exhibition or bazaar. Example: i. Pre-Event Promotion and Publicity ii. Attractive Booth Design and Product Display iii. Sampling and Free Tastings iv. Pricing and Discount v. Branding and Packaging, etc.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**

	Group work/ Collaborative learning: • Engage learners to plan and mount a school-based exhibition for their finished food products. • Invite the school management, staff and students to the exhibition to provide feedback on learner's food product and services. • Organise reflection for learners to share their experiences, achievements, challenges and recommendations for the use of exhibitions as a marketing strategy. **Talk for learning:** In mixed ability/gender/friendly /random groups, think-pair-square-share to discuss the factors to consider when planning to mount an exhibition of food products. **Experiential/Project based learning:** In mixed ability/gender/ friendly /random groups, plan and mount finished food products for exhibition to market and for appraisal.	
	3.2.2.LI.3	3.2.2.AS.3
	Explore career opportunities in the food industry. **Critical thinking and problem-solving skills:** • Apply knowledge and make connections to real life situations. • Identify and select appropriate careers for lifelong learning/future. **Digital Literacy:** Develop a strong passion and understanding of how to confidently use ICT tools to surf information from the internet about career opportunities in the food industry. **Personal development and Leadership skills:** • Demonstrate tolerance, self-esteem, adaptability in career choices and development in the food industry. • Seek additional information to build understanding **Problem based learning:** In mixed ability/gender/friendly /random groups review the term career.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**

	Example: Meaning of Career: The long-term professional journey of an individual, encompassing education, work experience and personal growth in a specific field i. Major aspects of a career ii. Education and Training iii. Work Experience iv. Career Progression v. Job Satisfaction and Fulfillment vi. Work-Life Balance, etc. Importance of a career i. Financial Stability ii. Personal Growth iii. Professional Identity iv. Social Contribution v. Networking and Opportunities, etc. Career Development Strategies i. Setting clear career goals ii. Engaging in lifelong learning and skill development iii. Seeking mentorship and professional networking iv. Adapting to industry changes and technological advancements v. Pursuing leadership roles and entrepreneurial opportunities, etc. **Talk for learning:** In mixed ability/gender/friendly /random groups, use concept maps/cartoons to discuss the various career opportunities in the Food and Nutrition industry Example: i. Nutrition and Dietetics Careers ii. Food Science and Technology Careers iii. Culinary and Food Service Careers iv. Food Production and Agribusiness Careers v. Research and Development (R&D) Careers vi. Food Marketing and Entrepreneurship Careers vii. Government and Regulatory Careers viii. Education and Training Careers	

	Group work/ Collaborative learning: In mixed ability/gender/ friendly/random groups, identify the competencies required for careers in the food production and service industry. Example: i. Pay close attention to details ii. Sense of hygiene and cleanliness iii. Pleasant and friendly personality iv. Initiative v. Creativity and innovation vi. Interest in the career path vii. Work well and get along with others. **Experiential/project-based Learning**: In mixed ability/gender/ friendly /random groups, visit Food and Nutrition related careers, businesses/industries in the community and explore the requirements needed for the job opportunity and investigate and report on different careers in the food industries. Present a report for class discussion.	
	3.2.2.LI.4	3.2.2.AS.4
	Discuss work ethics in the food industry **Problem based learning:** In mixed ability/gender/friendly/cultural /random groups, employ think-pair-share to explain the term work ethics and its importance in the food industry. **Group work/ Collaborative learning:** In mixed ability/gender/friendly/cultural /random groups, discuss qualities that promote good work ethics. Example: i. Punctuality at work ii. Honesty iii. Being reliable **Experiential learning:** In mixed ability/gender/friendly/cultural /random groups' role play to depict some ethics at a food production or service establishment.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**

Teaching and Learning Materials	• Sample of packaged foods • Manila cards • Colour pencils/pastels/ pictures • Videos, • Internet • Note pads • Computers	• Projectors • Mobile phones (if possible) • Food production units in the community for observation • Pictures • Pastels/ markers/ Pictures or videos previous exhibition • Pictures/ videos of food and nutrition jobs or workplaces, etc.