AGRICULTURE

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

YEAR THREE

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.

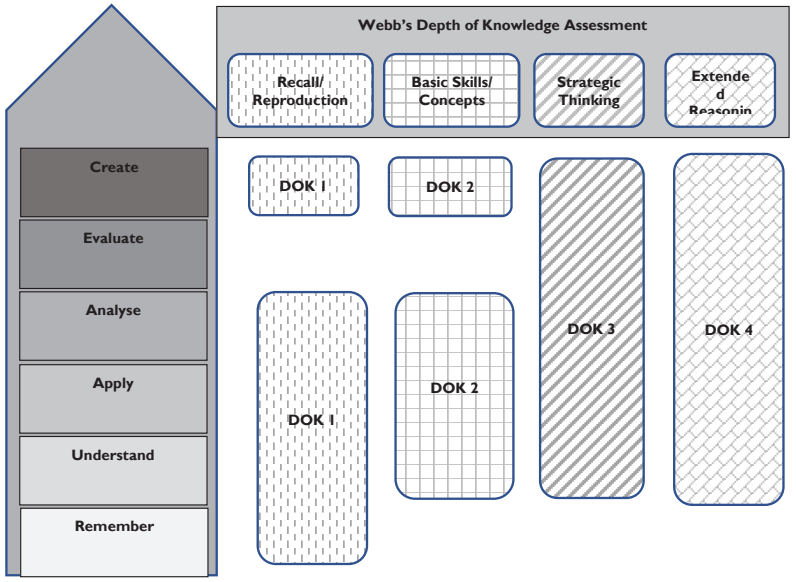

Figure 1: Revised Bloom Taxonomy combined with Webb's Depth of Knowledge for Teaching and Assessment

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 AGRICULTURE

Philosophy

Every learner will be engrained with the principles of Agriculture, Food and Natural Resource Management to develop interest and appreciate the enterprises in Agriculture to advance their potentials to the fullest through climate-awareness, learner-centred pedagogies, and emerging technologies in an enabling environment supported by resourceful teachers for world of work, continuous education and life-long learning.

Vision

Learners equipped with entrepreneurial, technological, and climate-smart skills and competencies capable of creating and managing agricultural enterprises to contribute to food security. Learners equipped to proceed to further study, world of work and adult life with emphasis on continuous education and life-long learning.

Goal

To guide learners, acquire the foundational knowledge and technological skills in Agriculture that will enable them to change their negative perceptions about the subjects, build their interests and competencies to thrive in further education, introduce them to agro-based enterprises and future careers, to enable them to contribute meaningfully to the improvement of Agriculture using climate smart strategies locally and in the global world.

Contextual Issues

Although Agriculture is the backbone of the country and the source of employment in the country, it is infused with many misconceptions that make the subject unattractive and uninteresting to the youth, thus leaving the burden on the aged who employ traditional methods making the sector more traditional than mechanical, scientific and research driven. In addition, Ghana's large tract of agricultural land and water resources remain uncultivated.

The situation is further heightened because:

- Agriculture is mainly done in the classroom instead of on the field,
- Emphasis on cognitive to the detriment of practical skills
- Inadequate teaching and learning resources as well as resourceful teachers, and
- Limited knowledge of agricultural enterprises.

Rationale

The study of Agriculture in Senior High School will enable learners to have a broad base training in Agriculture that will equip them with scientific, technological and entrepreneurship skills and competencies, to enable them fit into the world of work, continuous education and life-long learning. This will be achieved using the 21st Century skills and competenices, GESI, resourceful/innovative teachers in an interactive learner-centred environment.

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SCOPE AND SEQUENCE

Agriculture Summary

S/N	STRAND	SUB-STRAND	YEAR 1			YEAR 2			YEAR 3		
			CS	LO	LI	CS	LO	LI	CS	LO	LI
1	Concept of Agriculture in an Industrializing Society	Agriculture and Society	2	2	5	2	2	5	1	1	3
		Agriculture and Industry	1	1	3	2	2	4	-	-	-
2	Modern Technical and Mechanised Agriculture	Modern Technical Agriculture	1	1	3	2	2	4	-	-	-
		Modern Mechanised Agriculture	3	3	7	2	2	6	1	1	2
3	Food Production and Natural Resource Conservation	Principles of Agriculture in Food Production	4	4	11	2	2	4	2	2	6
		Principles of Natural Resource Conservation in Agriculture	3	3	8	3	3	7	1	1	3
4	Agriculture and Health	Health issues in crop production	1	1	3	1	1	3	1	1	3
		Health issues in animal production	1	1	3	1	1	3	-	-	-
5	Agriculture Economics, Agribusiness and Communication	Economics for Agriculture	1	1	3	1	1	3	1	1	3
		Communication in Agriculture	1	1	2	1	1	2	-	-	-
		Agribusiness management	2	2	3	1	1	4	1	1	2
Total			20	20	51	18	18	45	8	8	22

Overall Totals (SHS 1 – 3)

Content Standards	46
Learning Outcomes	46
Learning Indicators	118

YEAR ONE

Subject AGRICULTURE
Strand 1 CONCEPT OF AGRICULTURE AND INDUSTRIALIZING SOCIETY
Sub-Strand 1 AGRICULTURE AND SOCIETY

Learning Outcomes	21st Century Skills and Competencies	GESI[1], SEL[2] and Shared National Values
1.1.1.LO.1		
Use the knowledge of the concepts in Agriculture to identify the career opportunities and to clear misconceptions about Agriculture.	**Communication, collaboration, creativity and critical thinking skills** will be required for and acquired from group discussion and presentation. **Digital literacy skills** for surfing the internet for information on importance of Agriculture. **Communication, collaboration, leadership skills** are required for group work. **Critical thinking and creative skills** are required to investigate the branches and sectors in Agriculture. **Digital literacy** for video/picture shooting of their interaction with community members and for playing back video/pictures.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace Gender Equity and Equality. **SEL**: Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Identify their own capabilities and qualities. • Overcome difficulties with self-regulation.

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

		• Listen to their peers' opinions and express disagreements in constructive ways. • Support each other in resolving interpersonal conflicts. • Relate classroom activities to their personal goals. **National Values:** • Respect of divergent views, tolerance in working in groups, resourcefulness in sourcing information and self-confidence in self-expression of ideas will be promoted. • Respect of divergent views, tolerance in working in groups will be promoted. • Dealing with setbacks, positive attitude, respect of divergent views and tolerance in working in groups will be promoted.
1.1.1.LO.2		
Use the knowledge acquired in Agriculture education for further studies, world of work and adult life.	**Communication** and **collaboration** are acquired as learners work in groups and make presentations. **Digital literacy**: skills acquired as learners surf the internet for information. **Digital literacy, teamwork, leadership**, and **communication skills:** are enhanced as learners surf for information on the internet, listen to the resource person and work in groups.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace Gender Equity and Equality. **SEL:** Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the

		Agriculture subject. Having studied together as learners with different capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Identify their own capabilities and qualities. • Explore opportunities on how they learn. • To respect others. • Exhibit good communication skills. **National Values:** • Resourcefulness in sourcing information for continuous education and lifelong learning, responsive citizenry will be promoted. • Responsible citizen, respect of divergent views and tolerance in working in groups should be facilitated.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
1.1.1.CS1	1.1.1.LI.1	1.1.1.AS.1
Demonstrate knowledge and understanding of the meaning, importance and branches in Agriculture as a discipline.	**Explain the meaning and importance of Agriculture.** **Initiating talk for learning**: The teacher should put learners in mixed-ability/ability groups (where appropriate) to brainstorm and come up with the meaning of Agriculture. Learners share their ideas with the whole class. Teacher should assist learners with difficulties with leading questions that will help them to come up with the definition. Learners who can give further details should be encouraged to do so. **Think-pair-share:** Learners individually list the importance of Agriculture to society and share with a peer in their group. Teacher should guide learners with difficulties with leading questions that will help them to come up with importance of Agriculture to society. Confident learners should be guided with probing question to give further explanation of the importance of Agriculture to the society. **Structuring talk for learning**: In their mixed-ability/ability groups (where appropriate), learners make a presentation on how Agriculture will impact their life and society in a plenary session. The teacher should ensure that all learners take part in gathering information for the presentation. The teacher should also assign roles equitably to learners in the groups.	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 branches and sectors of Agriculture and their related career opportunities. **Think-pair-share:** Teacher ask learners to individually surf the internet for the branches of Agriculture, list them and discuss in pairs. Teacher should support learners with links to websites, where they can get the required information.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning**

	Learners should be monitored not to veer into unauthorised websites. Teacher should ensure that all learners participate in the activities and discourage few learners from hijacking the activity. **Project-based learning:** Teacher puts learners in mixed-ability/mixed-gender groups (where applicable) and task them to create a flow chart to show the branches of Agriculture and their descriptions and make a presentation in class. Teacher should assist learners with examples of flow charts to enable them undertake the task. All learners should be encouraged to take part in creating the flow chart on the branches of Agriculture). Challenge learners who can give further details on the branches of Agriculture to do so. **Collaborative learning:** In their groups, learners investigate and report on the career opportunities in Agriculture that exist in their community. Teacher should guide learners with pictures of people in the various fields of Agriculture to enable them come up with the careers in Agriculture. Confident learners should be probed further to come up with careers in Agriculture that may not be available in their community.	**Level 4 Extended critical thinking and reasoning**
	1.1.1.LI 3	1.1.1.AS3
	Examine and dispel the misconceptions associated with the study of Agriculture. **Think-pair-share:** Learners individually identify the misconceptions in Agriculture and share their thoughts with a peer. Teacher should assist learners with leading questions that will help them to come up with the misconceptions in Agriculture, others should be probed further to give explanations as to why Agriculture faces such misconceptions. **Project-based learning:** The teacher should put learners in pairs to design a questionnaire on misconceptions in Agriculture. Learners administer the questionnaire in the community and tally their results. The teacher then assists	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**

	learners to analyse their data with Microsoft Excel. All learners should take part in designing and administration of the questionnaire on the misconception of Agriculture in the community. Some learners should be selected to play leading roles in entering data for analysis. Other learners should assist the group in analysing data obtained from the questionnaire. **Talking point**: The teacher puts learners in mixed-ability/mixed-gender groups (where applicable) to discuss how to address the misconceptions identified in their community. Learners make a presentation on the misconceptions and how to dispel them at a plenary session. The teacher should use pictures that dispel misconceptions about Agriculture to guide learners in the preparation of their presentation. The teacher should ensure that all learners participate in the discussion.		
Teaching and Learning Materials	• Functional internet connectivity • Video/pictures on the importance of Agriculture in society • Pens • Notebooks	• Agriculture textbooks • Model chart showing the sectors of Agriculture • Charts on the branches of Agriculture • Projectors	• Computers • Sample questionnaire on misconceptions in Agriculture • Camera • Video/pictures on mechanized farm owned by a female, a rich farmer, and a female driving a tractor.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
1.1.1.CS2	1.1.1.LI.1	1.1.1.AS.1
Demonstrate knowledge and understanding of the meaning, importance and scope of Agriculture education.	**Explain the meaning and importance of Agriculture education.** **Think-pair-share:** Learners individually think about the meaning of Agricultural Education and share it with his/her peers. Teacher should ensure that learners with difficulty are assisted with leading questions to define Agricultural education. teacher should challenge other learners to further explanations to the meaning of Agricultural education. **Problem-based learning:** In mixed-gender/gender groups (where applicable), learners surf the internet to come up with the importance of Agricultural Education and make a presentation in class. The teacher should help learners with suitable website links, that they can access the information needed for the presentation. The teacher should monitor learners not to veer into unapproved sites. The teacher should ensure that all learners fully participate in the activity to prevent a few learners from hijacking the activity. Confident learners should be given leading roles in presenting their findings. A resource person makes a presentation on the entry requirements for pursuing Agriculture and related courses, as well as specialisations at higher educational institutions to all learners. Learners listen to the resource person and ask questions for clarification.	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	
	Describe the types of Agriculture education. **Problem-based learning:** In mixed-ability/mixed-gender groups (where applicable), learners surf the internet to come up with the types of Agricultural Education. The teacher should assist learners with website links to where, they can access information on the types of Agricultural Education. The teacher should monitor learners not to veer into unapproved sites. The teacher should ensure that	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning**

	all learners fully participate in the activity to prevent a few learners from hijacking the activity. **Use Talk for learning**: Learners discuss the characteristics of the various types of Agricultural Education in a mixed-gender group. Teacher should provide additional support to learners who might need it. Encourage learners to delve deeper into bringing out more characteristics of the various types of Agricultural education.		Level 4 Extended critical thinking and reasoning
Teaching and Learning Materials	• Functional internet connectivity • Videos/pictures on the importance of Agriculture Education • Computer • Projector	• Pens • Notebook • Agriculture textbooks • Videos/pictures on the types of Agriculture education.	• Resource persons from higher institutions • Computer • Radio • Televisions

Subject AGRICULTURE
Strand 1 CONCEPT OF AGRICULTURE AND INDUSTRIALIZING SOCIETY
Sub-Strand 2 AGRICULTURE AND INDUSTRY

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
1.1.2.LO.1		
Use the knowledge acquired on the meaning, importance and the interdependence of Agriculture and industry to help promote growth and development of the Agriculture sector.	**Critical thinking and digital literacy skills:** will be acquired as learners surf the internet, make enquiries and create a table. **Communication** and **collaborative skills:** will be enhanced during group work. **Teamwork, creativity, digital literacy, communication and critical thinking skills**: are acquired from the investigation, group work and building portfolio. **Creative, communication, innovation and critical thinking skills**: for the writing of the essay and group discussion on the challenges and solutions of Agriculture in an industrializing society.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL:** Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Identify their own capabilities and qualities. • Set goals and work to achieve them. • Work together in groups or with partners. • Assume decision-making roles related to classroom activities and rules.

		National Values: • Respect for divergent views, tolerance in working in groups, leadership and resourcefulness in sourcing information should be promoted. • Respect for divergent views, tolerance in working in groups, resourcefulness in sourcing information and self-confidence in self-expression of ideas will be promoted. • Dealing with setbacks, probity, accountability, respect for divergent views, tolerance in working in groups and resourcefulness in sourcing information will be promoted.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
1.1.2.CS1	1.1.2.LI.1	1.1.2.AS.1
Demonstrate knowledge and understanding of the meaning, importance and interdependence of Agriculture and industry.	**Explain the meaning and importance of industry in Agriculture.** **Think-pair-share:** The teacher asks learners to think about the meaning of industry in Agriculture and share their thoughts in pairs. The teacher provides clues to learners with difficulties to guide them to define the meaning of industry in Agriculture. Encourage other learners who are capable to delve deeper into bringing out further explanation of the meaning of industries in Agriculture. **Inquiry-based learning:** Put learners in mixed-ability/gender-based groups (where applicable) for them to surf the internet to come up with the types of industries in Agriculture and their importance in promoting growth and development. Teacher should assist learners with website links to where, they can access information on the types of industries in Agriculture and their importance in promoting growth and development. Teacher should monitor learners not to veer into unapproved sites. Teacher should ensure that all learners fully participate in the activity to prevent a few learners from hijacking the activity. Learners who know how to surf the internet should be encouraged to assist those with difficulties. **Problem-based learning:** In the same groups, learners prepare a table to show the Agro-Based Industries in their community and what they produce. All learners should be involved in the preparation of a table. Teacher should provide extra support to students who might need it.	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
	Discuss the interdependence of Agriculture and industry. **Project-based learning**: Put learners in mixed-gender/mixed-ability groups (where appropriate) to investigate the interdependence between Agriculture and industry in their community. Teacher should assist learners with leading questions to help them	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning**

	establish the interdependency between Agriculture and industry in their community. Teacher should challenge learners with the ability to give further examples of the interdependency between Agriculture and industry. **Experiential learning**: In mixed-ability/mixed-gender groups (where applicable), learners watch a video, pictures or embark on a field trip to a farm and an Agro-Based Industry such as corn mill. Learners identify how the farm and the Agro-Based Industry depend on each other and build a portfolio. All learners should be involved in the portfolio building. Talented learners should be encouraged to assist those with difficulties.	**Level 4 Extended critical thinking and reasoning**
	1.1.2.LI.3	1.1.2.AS.3
	Analyse the economic challenges and solutions of Agriculture in an industrializing society. **Talk for learning:** Teacher puts learners in mixed-gender/ability groups (where applicable) to discuss the various challenges facing Agriculture in an industrialising society. Teacher should assist learners with difficulty in identifying the challenges facing Agriculture in an industrialising society. Talented learners should be challenged to explain further the challenges facing Agriculture in an industrialising society. **Collaborative Learning:** Learners in mixed ability groups write an essay on the challenges of Agriculture in an industrialising society, suggesting possible solutions. Teacher should ensure that all learners participate in the activity. Teacher should encourage talented learners to assist group members with difficulty in information gathering and writing of the essay.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**
Teaching and Learning Materials	• Functional internet connectivity realia (example of final products of Agricultural products like tinned tomato paste, canned fish etc.) • Flow chart showing raw Agricultural products and their final industrial products e.g., tomato fruit to tomato paste; groundnut seeds to groundnut oil	• Pictures of agro-based industries • Computer • Pens • Notebooks

	• Pictures and videos/pictures of a commercialized farm showing the interdependence of Agriculture and industry • Functional internet connectivity to surf the internet for information on the economic challenges of Agriculture in an Industrializing society and possible solutions	

Subject AGRICULTURE
Strand 2 MODERN TECHNICAL AND MECHANISED AGRICULTURE
Sub-Strand 1 MODERN TECHNICAL AGRICULTURE

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
1.2.1.LO.1		
Use the knowledge and skills acquired in measurements to determine the physical attributes of Agricultural inputs and produce.	**Critical thinking, communication, manipulative skills, collaboration and digital literacy:** are promoted during brainstorming, group work, discussions and practical exercise in measurements and playback of video/pictures. **Collaboration** and **communication skills:** enhanced as learners interact and share their views. **Manipulative, global citizenship and digital literacy:** are acquired as learners undertake the measurement project and compare the indigenous measurements to the standardized measurements. **Critical thinking, manipulative and digital literacy skills:** are required for the measurements, calculation and application of chemicals/drugs. **Communication, teamwork and leadership skills:** are required for group work for individuals to share ideas with peers and accept constructive feedback.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL:** Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different

		capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Identify their own capabilities and qualities. • Feel successful in the endeavors. • Manage their thoughts and behaviors. • Be aware of real-world problems and issues and apply what they are learning. • Pay attention to detail, thus enhancing their accuracy/precision skills. **National Values:** • Honesty, tolerance, transparency, truthfulness, accountability, integrity, standardization and accuracy will be promoted. • Science and indigenous knowledge integration, adaptability, responsible citizenship, resourcefulness, reliance and respect will be acquired. • Standardization, equality, Trust, transparency, reliability will be promoted.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
1.2.1CS.1	1.2.1.LI.1	1.2.1.AS.1
Demonstrate knowledge, understanding and skills of measurements, measuring tools and their uses in Agricultural production.	**Outline the uses and maintenance procedures of measuring tools used in Agricultural production.** **Think-pair-share:** Learners individually list examples of Agricultural tools and instruments and their use(s) and share with a peer. Teacher assists learners with realia/pictures of tools and instruments to help learners list examples of tools and instruments in Agricultural production. The teacher should challenge talented students to list more tools and instruments in Agriculture production that are not part of the realia/pictures provided. **Collaborative learning:** Teacher puts learners in mixed-ability/gender-based groups (where applicable) to watch video/pictures on the appropriate uses and maintenance of some tools and instruments in Agricultural activities and discuss their observations in groups. Encourage all learners to take active participation in the activities. Learners with sight or hearing difficulties should be seated in a way they can benefit from the video/picture**.** Learners should be assisted with leading questions to come up with their observations. **Experiential learning:** Learners in their groups, guided by the instructor/technician, demonstrate measurements in the laboratory and field using the measuring instruments provided. Encourage all learners to take active participation in the activities. Learners with difficulties in using the tools and instruments should be given the necessary support. All safety protocols in the laboratory and the field should be strictly observed.	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
	Relate the indigenous measuring tools to the standardized units of measurements in Agricultural production. **Think-Pair-Share**: Learners identify indigenous measuring tools in ability groups. Learners then discuss the uses of the indigenous measuring tools in their community. Teacher should use pictures to guide learners in the identification of the indigenous	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning**

	measuring tools. Learners with abilities should be challenged to give more examples of the indigenous measuring tools. **Project-Based Learning**: Put learners in mixed ability groups to measure quantities of Agricultural inputs and products using the indigenous methods and the standardised measuring instruments to determine the actual measurements. Learners also prepare a table showing the equivalent values of indigenous measurement units and their corresponding standardised units. learners with difficulty in using the measuring instruments should be given the needed support. Teacher must ensure accurate measurements to avoid distortions. Teacher should challenge learners with abilities to compare more indigenous measurements with standardized measurements. **Initiating Talk for Learning:** Learners discuss the implications of using the indigenous measuring tools in Agricultural activities in mixed ability groups. Teacher should ensure that all learners ae involved in the discussion. Groups with difficulties should be given the needed support.	**Level 4 Extended critical thinking and reasoning**
	1.2.1.LI.3	1.2.1.AS.3
	Demonstrate the use of simple scientific measuring tools to calculate parameters related to the various Agricultural sectors. **Initiating Talk For Learning**: Teacher puts learners in ability/ gender-based groups (where appropriate) to discuss the various parameters that are taken in the various sectors of Agriculture. Teacher should prompt learners with difficulty with clues to help them come up with parameters that are measured in Agriculture. Talented learners should be challenged to explain more parameters measured in Agricultural production. **Inquiry-Based Learning:** Learners in their groups research to come up with how the various parameters are calculated. Teacher should assist learners with difficulties with some form of information like formulae, to assist them on how to calculate the various parameters in Agricultural production. Other learners should be encouraged to calculate more complex parameters.	Level 1 Recall **Level 2 Skills of conceptual understanding** Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**

	Collaborative learning: In the same groups, learners prepare a portfolio of the parameters taken in the various sectors of Agriculture and how they are calculated. Learners with difficulties should be given the needed support.		
Teaching and Learning Materials	• Realia (measuring instruments used in Agricultural activities e.g., tape measure, scale) • Video/pictures on the appropriate use of measuring instruments in Agricultural activities • Computer • Pen • Notebooks	• Agricultural Mechanisation and Power • Textbooks • Owner and maintenance manuals • Realia (farm inputs and products e.g., feed ingredients, maize, weedicides etc)	• Realia (indigenous measuring instruments e.g., olonka tin, bottle cover, head pan, rubber bucket, quarter rubber, arm stretch, foot • Calculator • Standardized measuring instrument e.g., measuring cylinder, measuring tape, weighing scale etc • Measuring instruments (thermometer, rain gauge, measuring tape, electronic scale, measuring cylinder, beaker etc)

Subject AGRICULTURE
Strand 2 MODERN TECHNICAL AND MECHANISED AGRICUTURE
Sub-Strand 2 MODERN MECHANIZED AGRICULTURE

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
1.2.2.LO.1		
Use the knowledge and skills acquired to operate farm machines and power and observe the necessary safety measures in Agricultural production.	**Teamwork, leadership skills, critical thinking and digital literacy:** are required for and will be enhanced from group work, playback of videos/pictures, building of portfolio and presentation of work. **Creative, leadership, collaborative and critical thinking skills:** will be enhanced as learners engage in group work, farm/workshop visits, report writing and operation of machines and power. **Communication skills:** will be promoted during the description of the steps involved in the demonstration of the safety measures. **Creative thinking, innovation, critical thinking, manipulative, teamwork, digital literacy and leadership skills**: will be enhanced during the application of first aid to injured worker(s) and also to develop and perform the role play on first aid.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL**: Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different

		capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Pay attention to details thus enhancing their accuracy/precision skills. • Be aware of real-world challenges and apply what they are learning. • Reflect on positive and negative choices in relationships and consequences of each choice. • Develop their own strategies to complete a task or learn a new concept. **National Values:** • Adaptability, cooperation, equality, responsibility, diligence and dealing with setbacks will be enhanced. • Diligence, empathy, inclusiveness, responsibility, confidence and self-control will be inculcated. • Consciousness, positive attitude, and self-discipline will be enhanced.
1.2.2.LO.2		
Use the knowledge and skills acquired to select and employ the appropriate farm machine and power for Agricultural production.	**Creative, leadership, teamwork, manipulative, communication and critical thinking skills:** will be enhanced during group work, farm/workshop visits, report writing and operation of machines. **Communication skills:** will be improved during the description of the steps involved in the demonstration of farm machines and group discussions.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds.

	Critical thinking, leadership skills, teamwork, communication and manipulative skills: will be enhanced during group work, operation and maintenance of the farm implements/machines, and report writing.	• Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL**: Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Pay attention to details thus enhancing their accuracy/precision skills. • Be aware of real-world challenges to apply what they are learning. • To make the right choices. • Develop their own strategies on how to complete a task. **National Values:** • Respect for divergent views, equality and tolerance in working in groups will be encouraged.

		• Maintenance culture, prudence, diligence, co-operation, excellence, conformity, and dealing with setbacks will be promoted.
1.2.2.LO.3		
Use the knowledge and skills acquired to operate and maintain simple farm machines and implements in agricultural production.	**Critical thinking, leadership skills, teamwork, communication and manipulative skills:** will be enhanced as learners undertake group work, visit to mechanic shop, operation and maintenance of the farm implements/machines and report writing. **Communication skills:** will be promoted during group interaction and the writing of reports.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL**: Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different capabilities, abilities and gender, at different levels of proficiency, the socio-emotional

		learning aspects of the pedagogy have empowered learners to: • Pay attention to details thus enhancing their accuracy/precision skills. • Be aware of real-world challenges to apply what they are learning. • To make the right choices. • Develop their own strategies on how to complete a task. **National Values:** • Respect for divergent views, equality and tolerance in working in groups will be encouraged. • Maintenance culture, prudence, diligence, co-operation, excellence, conformity, and dealing with setbacks will be promoted.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
1.2.2.CS.1	1.2.2.LI.1	1.2.2.AS.1
Demonstrate knowledge and understanding of the meaning, importance and safety measures, as well as skills in operating farm machines and power.	**Explain the meaning and importance of farm mechanics and power in Agricultural production**. **Talk For Learning**: Learners in pairs brainstorm to come up with the meaning and importance of farm mechanisation and farm Power. Teacher should use pictures /charts of farm machines and power to assist learners define farm mechanisation and power. Challenge gifted learners to give further explanation to the meaning and importance farm mechanisation and power. **Experiential Learning:** Learners in mixed-gender groups (where appropriate) embark on a field trip to a nearby farm/watch a video/picture on mechanisation in Agriculture to observe and document the machinery that is used in Agricultural activities and build a portfolio on their visit. Teacher should assist learners with difficulties with pictures and probing questions to help them build their portfolio on machinery used in Agricultural activities. All learners should be encouraged to participate in the activities. Teacher should ensure that all safety measures are adhered to when visiting the farm. Pictures/videos that portray gender bias should be avoided or when identified it should be discussed. • **Project-Based Learning**: In mixed-gender groups, learners present a report on the importance of mechanisation and farm power in Agricultural production. All learners should be encouraged to participate in the preparation of the report. Learners who are good with report preparation should be encouraged to support other learners.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning.
	1.2.2.LI.2	1.2.2.AS.2
	Describe the safety measures employed in operating farm machines and power in Agricultural production. **Problem-Based Learning:** In ability groups, learners brainstorm to come up with examples of safety measures that need to be observed during Agricultural activities. Teacher should use videos/pictures to guide learners to identify safety measures	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning**

	employed during Agricultural activities. Gifted learners should be challenged to give more examples of the safety measures employed during Agricultural activities. Teacher should ensure that videos used are not gender bias. **Experiential learning:** Put learners in mixed gender groups to visit farm machinery workshop or watch a video/picture on activities that are carried out at a farm site/machinery workshop and discuss the safety measures that should be put in place to avoid injuries. The teacher should ensure that all the safety protocols at the farm machinery workshop are strictly adhered to. learners should be guided with probing questions to come up with safety measures employed in Agricultural activities aside what they observed at the machinery workshop. **Experiential learning:** Learners in gender-based groups perform a farm activity such as preparation of beds, application of fertilisers etc. and demonstrate the safety measures that should be put in place before performing the activity. All learners should be encouraged to participate in the activity. Learners who have difficulties in performing the activities should assisted. **Experiential learning:** Learners in mixed ability groups demonstrate the appropriate use of some PPEs in Agricultural production. Learners with difficulties should be assisted by a master craftsman in doing the activities. Every leaner should be given the opportunity to practice the appropriate used of the PPEs in Agricultural production. This can be achieved when learners practice on a rota basis.	**Level 4 Extended critical thinking and reasoning**
	1.2.2.LI.3	1.2.2.AS.3
	Apply the knowledge and skills of safety measures in handling accidents and injuries of an Agricultural worker using appropriate first aid. **Manage Talk for Learning:** Learners in pairs brainstorm to come up with the meaning of occupational injuries in Agricultural production. Teacher assists learners with leading questions to come up with the meaning of occupational injuries in Agriculture. Talented learners should be challenged to give further explanation to the meaning of occupational injuries in Agriculture.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	Initiating Talk for Learning: Learners in ability groups discuss the causes of injuries in Agricultural production. Teacher should use scenarios of causes of accidents to guide learners in discussing the causes of injuries in Agricultural production. Learners with abilities should be challenged to delve deeper into the causes of injuries in Agricultural production. **Experiential Learning:** learners watch video/picture on the types of injuries in Agricultural production. Learners then discuss the types of injuries in Agricultural productions in mixed ability groups. Learners with sight or hearing difficulties should be seated in a way to help them benefit from the video/picture. Learners should be supported with leading questions to assist them in coming up with the types of injuries in Agricultural productions. Teacher should caution learners on the sensitivity of the video/picture before use. **Managed Talk for Learning:** In ability/mixed-gender groups (where applicable), learners discuss the contents of a first aid box and their uses. E.g., bandage, gauze, plaster, string, alcohol, etc. Teacher assists learners with realia/pictures to identify some contents of a first aid box and their uses. Gifted learners should be guided with probing questions to come up with other contents of a first aid box which were not provided. Learners should be given opportunities to identify which of the contents they are familiar with. **Initiate Talk for Learning**: Guided by a health worker or a first aider, learners in mixed-ability/mix-gender groups (where applicable) discuss the implications of using inappropriate first aid materials and treatment of wounds. The health worker should use pictures of complications developed from the use of inappropriate first aid material in treatment of wounds to assist learners to appreciate the effects of using inappropriate first aid materials in treatments of wounds. Learners should be allowed to share experiences of using inappropriate first aid materials and applications of chemicals on wounds. **Manage Talk for Learning:** Learners discuss the indigenous ways of providing first aid to injured persons at a farm site in mixed ability groups. Teacher should use leading	

	questions to guide learners to come up with indigenous (local) ways of providing first aid to injured persons at a farm site. Learners should be allowed to share experiences of assisting injured persons using indigenous methods. Teacher should alert learners on the dangers of some of these indigenous first aids where appropriate. **Managing Talk for Learning:** Learners in mixed ability groups discuss the general safety measures that are employed at a farm site. Teacher should use pictures/videos of the safety measures that are employed at a farm site to guide learners in coming up with the safety measures. Videos that depict gender biasness should be avoid. Learners with difficulties should be given the needed support. **Project-Based Learning:** learners in ability groups assess the level of risk associated with the use of particular farm equipment and machinery and recommend the safety measure to put in place before operating the equipment or machinery. All learners should be encouraged to participate actively in the activity. Groups with difficulties in undertaking the risk assessment should be given the necessary support.	
Teaching and Learning Materials	• Realia (farm tools and implements such as cutlass, hoe, hook and line, burdizzo, etc) • Videos/pictures on Agricultural mechanisation • Computer • Projector • Pen • Notebook • Textbooks in Agricultural mechanisation and power • Wellington boots • Hand gloves	• Nose mask • Hat • Hammer • Knapsack sprayer • First aid box • Bandage • Gauze • Alcohol • Water	• Ointment • Tourniquet • Thermal Blanket • Antiseptic Wash • Pair of scissors • Bandages and knuckle bandages • Adhesive bandage • Ice packs • Eye wash

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
1.2.2.CS.2	1.2.2.LI.1	1.2.2.AS.1
Demonstrate knowledge, understanding and skills of the types and uses of farm machines and power, and factors affecting their efficiency.	**Describe the types and uses of farm machines and power in Agricultural production.** **Initiate Talk for Learning:** In mixed-gender/mix ability groups (where applicable), learners embark on a field trip to a nearby mechanised farm or watch videos/pictures on farm mechanisation, to identify and describe the various farm machines and power. Learners then discuss the uses of the various farm machines. Teacher should ensure learners observe strict safety protocols at the mechanised farm. Videos that portray gender biases should be avoided. Learners with difficulties should be supported with leading questions to identify and describe the farm machines and power. Challenge learners with abilities to give more examples and further descriptions of the fam mechanization and power. **Experiential Learning:** Guided by a technician, learners in gender- based groups demonstrate the use of some of the farm implements in Agricultural production. Teachers should ensure that all the safety protocol are strictly observed. Learners should be guided to do a risk assessment before operating the farm implements. All learners should be given the opportunity to operate the farm implements and this can be done on a rota basis. Learners with difficulties should be given the needed assistance. **Talk for Learning:** Learners in mixed-gender and/or mixed-ability groups, discuss the sources of power and the advantages and disadvantages in Agricultural operations. Teacher should ensure all learners participate in the discussions. Teacher should use probing questions to guide learners to identify the sources of power in Agricultural productions and their advantages and disadvantages.	**Level 1 Recall** **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
	1.2.2.LI.2	1.2.2.AS.2
	Describe the factors that affect the use of farm machines and power.	Level 1 Recall **Level 2 Skills of conceptual understanding**

	Problem-Based Learning: In mixed-ability groups, learners brainstorm to come up with the factors that affect the efficiency of farm machines and power during Agricultural activities. Teacher should use leading questions to guide learners to identity the factors that affect the efficiency of farm machines and power during Agricultural activities. Gifted learners should be probed further to come up with further explanations of the factors. **Experiential Learning**: In mixed-gender/mixed ability groups, learners visit a farm site/ farm machinery workshop or watch videos/pictures on the use of farm machines and power sources, and make recommendations on how the machines can be used efficiently. Teacher should ensure learners observe strict safety protocols at the farm site/ farm machinery workshop. Videos that portray gender biases should be avoided. Learners with difficulties should be supported with leading questions to make recommendations on how the machines can be used efficiently.	**Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
Teaching and Learning Materials	• Pictures or video/pictures of Agriculture machines and implements such as tractor, combined harvester, feed mill machines, bowl chopper, plough, harrow, rigger, planter, harvester etc. • Pictures/videos on the operation and maintenance of Agricultural machines and implements such as tractor, combined harvester, feed mill machines, bowl chopper, plough, harrow, ridger, planter, harvester etc. Realia (mist blower, knapsack sprayer, lawn mower etc.).	

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
1.2.2.CS.3	1.2.2.LI.1	1.2.2.AS.1
Demonstrate knowledge and skills of operating and repairing simple farm machines and implements in Agricultural production.	**Identify the principal parts of farm machines and implements and state their functions.** **Experiential Learning:** In mixed-gender groups, learners visit a mechanic shop or watch videos/pictures on Agricultural implements and machines, and with the help of a master craftsman learners identify the principal parts of some farm machines and implements. Teacher should ensure that learners observe all the safety protocol at the mechanic shop. If videos/picture are used it should not portray gender biases. Learners with difficulties should given the needed support. **Inquiry-based learning:** Learners in ability groups surf the internet to come up with the description and functions of the parts of farm implements and machines and present a report on their findings. Teacher should provide learners with websites to help them gather information on the description and functions of the parts of farm implements and machines. Learners with abilities should assist others who might help. Teacher should ensure learners do not veer off to watch unapproved contents.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
	1.2.2.LI.2	1.2.2.AS.2
	Operate and maintain farm machines and implements in Agricultural production. **Experiential Learning:** With the help of a master craftsman/technician, learners in gender-based groups discuss the step-by-step operation of simple farm machines and implements. The master craftsman demonstrates the operation of the simple farm machine and implements observing all the necessary safety measures. Learners in turn operate some of the simple farm machines and implements to perform an Agriculture activity. Teacher should ensure that all safety measures and protocols are strictly adhered to by learners before the operation of the farm machine and implements. Learners should be assisted to do risk assessment of the machine and implements to avoid accidents. Learners with difficulties in operating the machines should be assisted. All	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**

	learners should be given the opportunity to operate the machine or implement and this can be done on a rota basis. **Experiential Learning:** All learners watch videos/pictures on the operation of complex farm machines and implements such as tractors, combined harvesters, etc. Teacher should ensure that videos that portray gender biases are not used. Learners with hearing or visual difficulties should be seated in such a way that they can benefit from the video. **Project-Based Learning**: Master craftsman discusses with learners in gender-based groups the procedures for maintaining simple farm machines and implements. The master craftsman demonstrates the procedures for the maintenance of some simple farm machines and implements. Learners in gender-based groups practice the maintenance of a chosen farm machine and an implement. The teacher should ensure that all safety protocols are strictly adhered to. All learners should encourage actively participate in the activity. Learners with difficulties should be given the needed support.	
Teaching and Learning Materials	• Pictures or videos/pictures of Agriculture machines and implements such as tractor, combined harvester, feed mill machines, bowl chopper, plough, harrow, rigger, planter, harvester etc • Pictures/videos on the operation and maintenance of Agricultural machines and implements such as tractor, combined harvester, feed mill machines, bowl chopper, plough, harrow, ridger, planter, harvester etc. Realia (mist blower, knapsack sprayer, lawn mower etc)	

Subject AGRICULTURE
Strand 3 FOOD PRODUCTION AND NATURAL RESOURCE CONSERVATION
Sub-Strand 1 PRINCIPLES OF AGRICULTURE IN FOOD PRODUCTION

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
1.3.1.LO.1		
Use knowledge of the identification and classification of crops in crop production for economic empowerment in the society.	**Critical thinking, communication, digital literacy** and **collaboration** will be promoted during brainstorming and discussion in pairs. **Critical thinking, communication, creative, digital literacy,** collaboration skills will be enhanced during group work, surfing the internet for information and creating of diagram.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL:** Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to:

		• Identify their own capabilities and qualities • Provide positive support for those having difficulties with self-regulation. • Manage their thoughts and behaviors. • Choose the right strategies to help them manage their work. • Work together in groups or with partners. **National Values:** Appreciation, originality, sense of belonging, positive attitude and patriotism will be promoted.
1.3.1.LO.2		
Use the knowledge and skills acquired in the crop production practices to establish a crop farm.	**Critical thinking, communication,** and **collaborative skills** will be re-enforced during brainstorming and discussion in pairs. **Teamwork, leadership** and **communication skills** will be enhanced during mixed ability group discussions. **Teamwork, manipulative, leadership, creative** and **communication skills** will be inculcated during portfolio building and hands-on practical activities.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Value and work in favour of a democratic and inclusive society. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the Agriculture sector and advocate for change. • Embrace gender equity and equality.

		SEL: Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Identify their own capabilities and qualities. • Provided positive support for learners. having difficulties with self-regulation. • Provided opportunities for learners to practice managing their thoughts and behaviors. • Make the right choices from a range of strategies to help them manage their work. • Work together in groups or with partners. **National Values:** • Appreciation, originality, sense of belonging, positive attitude, patriotism, self-reliance, accountability, resourcefulness, and adaptability will be promoted. • Equality, tolerance, respect and leadership will be encouraged among learners.

1.3.1.LO.3		
Use the knowledge acquired on the importance, classification and distribution of breeds of farm animals for economic empowerment in the society.	**Critical thinking, communication, digital literacy** and **collaboration** will be enhanced in learners as they brainstorm and engage in discussions. **Critical thinking, creative, digital literacy, communication** and **collaborative skills** will be enhanced through surfing the internet for information and creation of projects. **Creative, innovative, digital literacy, teamwork** and **manipulative skill**s will be promoted during group work, video/pictures watching and creation of the map.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL**: Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Evaluate various real-world scenarios and make decisions based on the information at hand. • Identify their own capabilities and qualities • Provide positive support for learners having difficulties with self-regulation.

		• Manage their thoughts and behaviors. • Choose right from a range of strategies to help them manage their work. • Work together in groups or with partners. **National Values:** Transparency, diligence, empathy, responsiveness, accountability, equity, and self-reliance are to be promoted and inculcated.
1.3.1.LO.4		
Use the understanding of and the skills in the management practices of farm animals for rearing animals.	**Communication, teamwork** and **digital literacy skills** will be enhanced as learners work in groups and watch video/pictures. **Collaborative**, **critical thinking, communication, manipulative, creative, digital, literacy** and **critical thinking skills** will be enhanced as learners undertake hands-on farm practical, watch video/pictures and write report.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL**: Learners have been exposed to pedagogies that expounded socio-emotional

		issues while studying the Agriculture subject. Having studied together as learners with different capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Evaluate various real-world scenarios and make decisions based on the information at hand. • Identify their own capabilities and qualities • Provide positive support for those having difficulties with self-regulation. • Manage their thoughts and behaviors. • Choose right from a range of strategies to help them manage their work. • Work together in groups or with partners. **National Values:** Transparency, diligence, empathy, responsiveness, accountability, equity, and self-reliance will be promoted and inculcated.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
1.3.1.CS.1	1.3.1.L1.1	1.3.1.AS.1
Demonstrate knowledge and understanding of importance and classification of crops.	**Explain the meaning and importance of crops.** **Initiate Talk for Learning:** Put learners in pairs to brainstorm to find the meaning of crops in Agriculture. Learners should be assisted with leading questions that will help them to come up with the meaning of crops. Others should be guided to explain the meaning of crops. Fast learners should be challenged to give further explanations to the meaning of crops. **Experiential Learning:** All learners should be made to watch a video/pictures/charts on the importance and uses of crops and discuss their observations in pairs. The teacher should ensure that all learners stay focused while watching the video/pictures/charts to avoid anything that will distract their attention. Some learners should be assisted to state the importance of crops. Others should be probed further to explain or discuss the importance of crops.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
	1.3.1.L1.2	1.3.1.AS.2
	Describe the classification of crops with examples. **Initiating Talk for Learning:** Teacher asks learners to surf the internet for information on the classification of crops, reasons for classifying them and differences among the classes. They then discuss their findings in class. The teacher and learners who are good at using the internet should guide learners with difficulty in surfing for the required information. The teacher should monitor all students to ensure that they stick to only authorised sites. The teacher should assign leadership role to eloquent learners to lead the discussion in class. Shy and slow learners should be encouraged to talk in class. **Experiential Learning:** Teacher asks learners to identify indigenous and exotic crops from their homes and the local market after class and report their findings the following day in class. The teacher should ensure that all learners embark on	Level 1 Recall Level 2 Skills of conceptual understanding Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**

	the trip to the local market to identify the indigenous and exotic crops. Fast learners should provide support for slow learners to report their findings. **Project-Based Learning:** In mixed-ability groups, learners create a diagram to show the various classifications of crops with examples. Teacher should ensure that all learners, fully participate in creating the diagram to classify crops into the various categories. Students who are good at drawing should support those who need help.		
Teaching and Learning Materials	• Realia (e.g., of vegetables, arable and ornamentals crops) • Charts and video/pictures showing the importance of the various crops • Computer	• Projector • Pen	• Notebooks • Charts showing the classification of crops

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
1.3.1.CS.2	1.3.1.LI.1	1.1.AS1.1
Demonstrate knowledge and understanding of the meaning, principles and stages of crop production.	**Explain the meaning of the principles of crop production**. **Structuring Talk for Learning:** Teacher guides learners to brainstorm to come up with the meaning and principles of crop production. Assist learners to come up with the meaning of the principles of crop production. Guide others to explain the meaning and principles of crop production. Allow others to discuss the meaning and principles of crop production. Use charts and leading questions when necessary to support learners. **Think-Pair-Share:** Learners individually think about the meaning and key principles of crop production and write down their answers. Teacher puts learners in pairs, to discuss the key principles of crop production and analyse the effects of the principle on crop production. Teacher should provide extra support to some learners to explain the meaning and key principles of crop production. Teacher should allow others to discuss the meaning and key principles of crop production. Talented learners should be made to assist others in analysing the effects of the principles of crop production.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
	1.3.1.LI.2	1.3.1.AS.2
	Discuss the stages of crop production and its related practices. **Think-Pair-Share:** Learners individually list the stages of crop production. Teacher puts learners in pairs to share their results. Some learners should be assisted with leading questions that will help them to list the stages of crop production. Others should be given the opportunity to list the stages of crop production by themselves. Furthermore, the teacher should check the answers of all learners and encourage those with the correct answers to support others. **Initiate Talk for Learning:** Teacher puts learners in a mixed-ability or balanced ability groups to describe the various stages (pre-planting, planting and post-planting) of crop production. Learners should be given the flexibility to explain any	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	of the stages of crop production. Those with the ability to discuss all the stages should be allowed to do so. They should also be encouraged to support other learners after class to catch up. Furthermore, the teacher should use videos, charts and diagrams on the various stages of crop production to make things clearer to learners where necessary.	
	1.3.1.LI.3	1.3.1.AS.3
	Apply the principles in the crop production practices. **Initiate Talk for Learning:** Teacher puts learners in pairs to brainstorm to come up with the various farm practical activities involved in crop production. Some learners should be helped with leading questions to enable them to list the various farm practical activities involved in crop production. Others should be challenged to delve deeper by explaining the various farm practical activities involved in crop production. Learners should be allowed to surf the internet for information on the various farm practical activities involved in crop production. Also, videos, pictures or charts showing the various farm practical activities involved in crop production can be shown to learners if internet connectivity is a challenge. Ensure that all learners surf the internet or watch the video, pictures or charts on the various farm practical activities involved in crop production. Learners familiar with browsing should assist those that need help. The teacher should monitor the contents of what learners browse. Learners with visual or any form of learning impairments should be supported during the watching of videos, pictures or charts. **Project-Based Learning:** In balanced ability or mixed gender groups (where appropriate), learners perform simple activities such as pH measurement using litmus paper, soil temperature using thermometer, soil texture using the fingers and soaking seeds in water to check their viability. Assign a specific task to a group and allow each group to share the observations with the rests. Learners should also be taken to the field in rotation to perform weeding using hoe and cutlass, levelling of soil using a rake and fertiliser application using drilling, broadcasting and by spraying. A special practical section outside the normal classroom period should	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning:**

	be used for these practical activities. The teacher should ensure that all learners participate in the practical activities. Each student should be made to produce a record of the activities performed on the field. Those that require any form of support should be assisted appropriately. **Experiential Learning:** Teacher put learners in mixed-ability or gender-based groups to observe or watch video of a technician/master craftsman driving a tractor, ploughing, harrowing, performing soil nutrient test, weed control, post-harvest management of crops and how to design farm records. The teacher should arrange with the technician/master craftsman and learners when these practical activities (either video or demonstration by technician/master craftsman) should be performed outside the classroom period. It should be a time favourable and agreed by all. The teacher should consciously make all learners, especially females and learners with different forms of disability to take part in this section. Learners should be made to present a report on their observations, what activities they have undertaken and what they have learnt.	
Teaching and Learning Materials	• Realia: farm tools and implements e.g., cutlass, hoe, plough etc. • Video/pictures of the stages of crop production practices • Video/pictures of the stages, activities and skills in the crop production practices • Pest control tools and chemicals (Hand and knapsack sprayers, Boom sprayers, insecticides, herbicides etc.).	

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
1.3.1.CS.3	1.3.1.LI.1	1.3.1.AS.1
Demonstrate knowledge and understanding of importance, classification and distribution of breeds of farm animals.	**Explain the meaning and importance of farm animals.** **Initiate Talk for Learning:** Learners brainstorm in pairs to review the meaning of farm animals in Agriculture. Learners should be assisted with leading questions that will help them to come up with the meaning of farm animals. Others should be guided to explain the meaning of farm animals. Allow talented learners to give further explanation to the meaning of farm animals. Where necessary allow learners to surf the internet for the meaning of farm animals. The teacher should monitor learners during browsing and learners familiar with internet search should support others. **Experiential Learning**: All learners watch videos/pictures/charts on the importance of farm animals and discuss their observations in pairs. Learners work in pairs to state the importance of farm animals. Others work in pairs to explain the importance of farm animals. Challenge learners who can discuss the socio-economic importance of farm animals to the national economy to do so.	**Level 1 Recall** **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
	1.3.1.LI.2	1.3.1.AS.2
	Describe the classification of animals with examples. **Think-Pair-Share**: Learners individually identify farm animals in their community classify the animals and share with their peers. Learners should be supported with leading questions to list the classification of the various farm animals in their community. Where possible, the teacher should show learners pictures or charts to support them to classify the farm animals. The teacher should guide others to explain the various classifications of farm animals with specific examples. Encourage learners with the ability to list, classify and describe the various characteristics of farm animals to do so. Such learners should also be made to support other learners.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	Project-Based Learning: Put learners in gender-based/mixed-ability groups (where applicable) to create a diagram on the various classifications of farm animals and their examples. All learners should be involved in this activity. Learners can also be allowed to surf the internet for information on the classification of farm animals to aid them in their drawing. The teacher should monitor the contents of what learners browse. Fast learners and those who are good at drawing should support slow learners in the creation of the diagram.	
	1.3.1.LI.3	1.3.1.AS.3
	Analyse the distribution of farm animals in Ghana and West Africa. **Managing Talk for Learning:** Put learners in mixed-gender/mixed ability groups (where appropriate) to watch videos/pictures on the distribution of farm animals in Ghana and West Africa and discuss what they have observed in their groups. Learners should be supported to list the breeds and factors that affect the distribution of farm animals. Others should be guided to explain the factors that affect the distribution of farm animal breeds in Ghana. Allow those who can discuss the factors that influence the distribution of farm animal breeds in West Africa on their own to do so. **Project-Based Learning:** Learners surf the internet for a map of West Africa and Ghana showing the distribution of the breeds of farm animals. Learners individually draw maps of West Africa and Ghana to show the distribution of the breeds of farm animals. Where feasible, the teacher should provide learners with maps showing the distribution of farm animals in West Africa and Ghana for learners to trace. The teacher should ensure that all learners take part in the drawing and those who are good at drawing should be made to support those that are weak.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**
Teaching and Learning Materials	• Projector • Video/pictures on breeds of farm animals • Realia (examples of farm animals in the community) • Charts showing the classification of the farm animals and their examples	• Functional internet connectivity • Videos/pictures of examples of farm animals in the community • Charts showing the classification of the farm animals and their examples

		• Video/pictures of the breeds and distribution of farm animals

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
1.3.1.CS.4	1.3.1.LI.1	1.1.AS1.1
Demonstrate knowledge, understanding of and skills involved in the general management practices of farm animals.	**Explain the meaning and objectives of the general management practices in animal production** **Managing Talk for Learning:** Learners in mixed-ability/ability groups (where applicable) discuss the meaning and objective of the general management practices involved in animal production. Slow learners should be assisted with probing questions that will help them list the meaning and objectives of general management practices in animal production. Challenge others to explain the meaning and objectives of general management practices in animal production. Let learners with the ability to delve deeper into discussing the benefits of the objectives of proper management systems for keeping farm animals to do so. **Managing Talk for Learning:** Learners in mixed-ability/ability groups (where applicable) watch videos/pictures of managing farm animals and discuss the objectives of the general management practices involved in animal production. All learners should take part in watching the video/pictures and discussing the objectives of the general management practices involved in animal production). Confident and eloquent learners should be allowed to play lead roles in the discussion under the guidance of the teacher. All learners should be tolerant and respect each other's views. Learners should be appreciated for good submissions.	**Level 1 Recall** **Level 2 Skills of conceptual understanding** Level 3 Strategic reasoning Level 4 Extended critical thinking and reasoning
	1.3.1.LI.2	1.3.1.AS.2
	Discuss the management practices involved in animal production. **Experiential learning:** Learners in mixed-ability/ability groups (where applicable) embark on a visit to an animal farm on campus/nearby farm or watch videos/pictures to observe the management systems practised. Learners then discuss the management practices observed and write a report on them. All learners should take part in the visit or watch the video/pictures on management systems practised. Fast learners should lead slow learners under the guidance of the teacher in the discussion and report writing. Advance arrangements should be	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**

	made for the farm visit. The farm visit should be made outside the normal classroom period at an agreed time by the teacher, learners and farm manager/attendant. **Initiating talk for learning:** In mixed-ability/ability groups (where applicable), learners surf the Internet for the advantages and disadvantages of the types of management systems involved in farm animal production. Let some learners surf the Internet and list the advantages and disadvantages of the types of management systems. Allow others to surf the Internet and explain the advantages and disadvantages of the types of management systems. Challenge others to discuss the advantages and disadvantages of the types of management systems after surfing the Internet. Learners with no or little exposure to surfing the Internet should be supported by those familiar with the use of the Internet. The teacher should monitor the content of what learners browse. Learners interested in leading the class for discussions should be allowed to do so. **Think-pair-share:** Learners individually surf the internet to outline the factors involved in the choice of a suitable environment for keeping and managing farm animals. In pairs, learners present their findings in a plenary session in class. The teacher should ensure that the pictures/videos used do not reinforce gender stereotypes about animal farming. Where the material reflects traditional gender roles, teachers should identify and discuss it with the learners. All learners should be made to take part in the class discussions, especially learners with speech problems, the shy type and those with indiscernible health conditions. Allow those willing to take up leadership roles to do so.	
	1.3.1.LI.3	1.3.1.AS.3
	Apply the skills in farm animal management practices for rearing animals. **Collaborative learning:** The teacher puts learners in mixed-ability/mixed-gender groups (where appropriate) to discuss the various animal husbandry practices and the tools used for performing those activities. Learners with difficulty should be assisted with leading questions that will help them identify the	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning**

	various animal practices. Gifted and talented learners should be challenged to give further explanations on the various animal husbandry practices. **Experiential learning:** In mixed-ability/mixed-gender groups (where appropriate) learners perform hands-on farm practical activities, or watch videos/pictures of some of the management practices for learners to replicate them through guided interaction with a master craftsman/technician. All learners should be encouraged to take part in the hands-on farm practices especially females and learners with different forms of disabilities, ensuring the safety of the learners and the welfare of the animals. Fast learners should play leading roles. Learners write a report on the skills in the management practices of farm animals observed and present their report to the class.	**Level 4 Extended critical thinking and reasoning**
Teaching and Learning Materials	• Videos/pictures of management systems of farm animals • Functional internet connectivity • Computer • Projectors • Pens	• Notebook • Animal Production Textbooks • Realia, tools and equipment used in carrying out the skills in the management practices in farm animals e.g., scissors, burdizzo, ear tags • Video/pictures recording on the skills in the management practices of farm animals.

Subject AGRICULTURE
Strand 3 FOOD PRODUCTION AND NATURAL RESOURCE CONSERVATION
Sub-Strand 2 PRINCIPLES OF NATURAL RESOURCE CONSERVATION IN AGRICULTURE

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
1.3.2.LO.1		
Use the knowledge acquired to manage and conserve forests.	**Communication, collaborative, critical thinking, creative, leadership** and **digital literacy skills** will be promoted during brainstorming, watching of video/pictures, creation of diagram, group discussions and report writing. **Collaboration, teamwork, critical thinking** and **leadership skills** will be re-enforced during group work and reporting writing.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL:** Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Understand the causes and effects of environmental degradation. • Practice skills that ensure environmental integrity. **National Values:**

		• Responsibility, appreciation, patriotism, maintenance culture, diligence, positive attitude and conservation will be promoted and inculcated. • Responsibilities, appreciation, patriotism, maintenance culture, diligence, positive attitude and conservation will be inculcated. • Responsibility, appreciation, patriotism, maintenance culture, diligence, positive attitude and conservation will be emphasized.
1.3.2.LO.2		
Use the knowledge acquired to describe the nature, importance, composition and properties of soil.	Learners will improve their **communication, collaborative, creative** and **leadership skills** while participating in brainstorming, discussions and group work. **Communication, digital literacy, leadership** and **manipulative skills** will be fostered during the group activities and surfing the internet. **Manipulative, communication, creative** and **leadership skills** will be enhanced during the practical lessons.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL:** Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to:

		• Communicate effectively. • Work together in groups or with partners. • Explore how they learn effectively. **National Values:** • Respect for diverse views, sustainability, responsibility, inclusiveness and resourcefulness will be fostered. • Appreciation, love for nature, diligence, positive attitude and conservation will be fostered. • Respect, sustainability, responsibility, resourcefulness will be promoted.
1.3.2.LO.3		
Use the knowledge acquired to explain the relationship between climate change and food security.	**Teamwork, critical thinking digital literacy** and **communication skills** will be enhanced as learners brainstorm, watch video/pictures and engage in group discussions. **Global citizenship** will be enhanced as learners learn about the effect of climate change on food production. **Critical thinking, leadership, digital literacy** and **communication skills** will be enhanced during the report presentation and creation of charts. **Global citizenship** will be promoted as learners contribute to reducing climate change.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL:** Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different capabilities, abilities and gender, at different levels of proficiency, the socio-

		emotional learning aspects of the pedagogy have empowered learners to: • Work together in groups or with partners. • Explore how to learn effectively. • Listen to their peers' opinions and express disagreements in constructive ways. **National Values:** • Global citizenship, climate awareness, responsibility, appreciation and respect will be inculcated. • Adaptability, sustainability, global citizenship, patriotism, accountability and responsibility will be promoted.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
1.3.2.CS.1	1.3.2.LI.1	1.3.2.AS.1
Demonstrate the knowledge and understanding of the meaning, importance and principles of forestry and forest management.	**Explain the meaning of importance and principles of forestry and forest management.** **Managing Talk for learning:** Learners in pairs brainstorm to come up with the meaning of forestry and forest management in Agriculture. Provide leading questions to guide learners with difficulties in coming up with the definitions for forestry and forest management. Allow exceptional learners to give detailed explanations of the terms forestry and forest management. **Experiential learning:** In mixed-ability groups, learners visit a nearby forest/watch a video/picture of a forest and discuss the importance of forestry and forest management in Agriculture. Learners present a report on their observations during the visit to the forest. All learners should be encouraged to take part in the report writing however, some learners should take lead roles in the report writing. **Think-pair-share**: In pairs, learners discuss the principles of forestry and forest management in Agriculture and present their thoughts to the whole class. Ensure that the learners who form the pair are not at the same level in terms of their proficiency. Assist learners with challenges with leading questions to come up with the principles of forestry and forest management in Agriculture.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**
	1.3.2.LI.2	1.3.2.AS.2
	Discuss the concepts and the importance of the interrelations between forestry and Agriculture. **Talk for learning:** In mixed ability groups, surf the internet to come up with interdependence of Agriculture and forestry. Provide support for learners who have challenges with websites and links to come up with the interdependence between Agriculture and industry. Encourage talented learners to explain the interdependence	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	between Agriculture and forestry. Ensure that learners do not switch to other sites which are not related to the topic. **Project-based learning:** In mixed-gender groups (where applicable) learners prepare a diagram to show the interdependence of Agriculture and forestry and present their results. Ensure that all learners participate in the group activity. Groups with difficulties in preparing the diagram should be assisted with guiding questions. Learners should be encouraged to elect their group leaders.		
	1.3.2.LI.3		1.3.2.AS.3
	Discuss agroforestry practices and systems in forest management. **Experiential learning:** Learners in mixed-ability groups take a nature walk to an agro-forestry site in their community/watch a video/picture recording on agro-forestry systems and describe the various agroforestry practices and systems in forestry management for sustainable Agriculture. In the same mixed-ability groups, learners present their reports in a plenary session for feedback. Encourage all learners to take an active role in the report writing. Ensure that all learners put on protective gear e.g., wellington boots before embarking on the nature walk. Learners with sight challenges should be seated near the TV screen during the video watching.		Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
Teaching and Learning Materials	• Video/pictures of a forest • Projector • Textbooks on Forestry	• Diagram showing the interdependence of Agriculture and forestry • Notebooks • Video/pictures of agro-forestry systems in Agriculture	• Computer • Pens

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
1.3.2.CS.2	1.3.2.LI.1	1.3.2.AS.1
Demonstrate knowledge and understanding of the nature, importance, composition and properties of soil.	**Explain the meaning and nature of soil** **Managing Talk for Learning:** Brainstorm learners to come up with the meaning of soil. Assist learners with difficulty with leading questions to come up with the definition of soil in Agriculture production. Allow learners who are capable of coming up with detailed explanations of the meaning of soil in Agricultural production. **Collaborative learning:** Learners in ability groups discuss the functions of soil in Agricultural production. Assist groups with challenges with other materials to come up with the importance of soil in Agricultural production. Capable learners should be encouraged to provide detailed explanations of their ideas. **Experiential learning:** Learners in mixed-gender groups dig a pit of about 1m x 1m x 2m to discuss the various stratifications of the soil profile. All learners should be encouraged to take active parts in digging the pit and observing the soil profile. Assist learners with difficulties with guiding questions to identify the soil profile stratifications. **Managing Talk for Learning:** Learners in the ability groups discuss the importance of soil profile in Agricultural production. Learners with difficulties should be assisted with guiding questions and other materials to help them come up with the importance of soil profile in Agricultural production. Capable learners should be encouraged to provide information on the importance of soil profile in Agricultural production. **Experiential learning:** In mixed gender/ability groups (where appropriate) learners create a chart of the soil profile of their pit and label the layers. Encourage all learners to take part in the practical activity of creating the chart. Encourage learners to elect Group leaders to coordinate the activities.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
	1.3.2.LI.2	1.3.2.AS.2
	Describe the physical and chemical properties of soils and their importance.	Level 1 Recall

	Think-pair-share: Learners in pairs brainstorm to come up with the physical and chemical properties of soils and share their thoughts with the whole class. Examples: (soil texture, soil structure, soil water, soil pH, etc.). Assist learners with difficulties with leading questions to come up with the chemical and physical properties of soil. Learners who are capable of giving more examples should be encouraged. **Project-based learning:** Learners in mixed-ability groups, determine some physical and chemical properties (soil texture, soil structure, pH, porosity etc.) of the soil at different locations of the school garden. Learners then present their reports in a plenary session in class. Encourage all learners to take part in the determination of the chemical and physical properties of the soil in the school garden and the preparation of the presentation. Encourage capable learners to assist their group members in undertaking the activity and also in report writing and presentation.	Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
	1.3.2.LI.3	1.3.2.AS.3
	Examine and discuss the composition of soil. **Think-Pair-Share:** Learners examine soil samples provided and share their thoughts with their peers on the composition of the soil. Examples (moisture, organic matter, particles, organisms, etc.). Encourage all learners to examine the soil samples and share their thoughts. Learners having difficulties should be guided with leading questions to come up with the composition of soil and share. Learners who are capable of giving more details on the composition of soil should be encouraged. **Talk for learning:** Learners in ability groups discuss the importance of the various components of soil in Agricultural production. Groups facing difficulties should be assisted with guiding questions and other materials to assist them in the activity. Groups that can come up with more detailed information should be encouraged. **Experiential learning**: Learners in ability groups identify the compositions of soil samples from various positions of the school farm. Learners then write and present their reports in class for assessment. All learners should be encouraged to take an	Level 1 Recall Level 2 Skills of conceptual understanding Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**

	active role in the activity. Group members should be encouraged to elect group leaders who will coordinate their work.		
Teaching and Learning Materials	• Tools for digging the pit • Labelled picture/chart of a soil profile/structure • Functional internet connectivity • Soil textural triangle • Litmus paper	• Videos/pictures on the determination of the various components of soil • Measuring cylinder • Source of heat • Beakers	• Lime water • Muslin bag • Class tubes • Silica dish

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
1.3.2.CS.3	1.3.2.L1.1	1.3.2.AS.1
Demonstrate the knowledge and understanding of climate change to Food security.	**Explain the meaning and effects of climate change on food production.** **Initiating talk for learning**: Brainstorm learners to come up with the meaning of climate change. Learners with difficulties should be assisted with leading questions, pictures and other materials to come up with the meaning of climate change. Learners who can give detailed explanations of the meaning of climate change should be encouraged. **Experiential learning:** Learners watch videos/pictures on the effect of climate change and discuss the effect of climate change on food production in ability groups and make a presentation to the whole class. Learners with sight challenges should be seated near the television during the video/picture watching. Groups with difficulties should be supported with other materials and online resources to assist them carry out their activity. Groups who can provide more information should be encouraged. **Initiating talk for learning:** Learners in ability groups discuss the strategies that can be used to mitigate the effects of climate change on crop production and present their findings to the whole class. Groups with challenges should be assisted with guiding questions and other resources and materials to assist them in their activity. Groups who can provide detailed explanations of their ideas should be encouraged.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
	1.3.2.L1.2	1.3.2.AS.2
	Discuss the effects of climate change on food security and evaluate the mitigating strategies. **Initiating talk for learning**: Brainstorm learners to come up with the meaning of climate change. Learners with difficulties should be assisted with leading questions, pictures and other materials to come up with the meaning of climate change. Learners who can give detailed explanations of the meaning of climate change should be encouraged.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	Experiential learning: Learners watch videos/pictures on the effect of climate change and discuss the effect of climate change on food production in ability groups and make a presentation to the whole class. Learners with sight challenges should be seated near the television during the video/picture watching. Groups with difficulties should be supported with other materials and online resources to assist them carry out their activity. Groups who can provide more information should be encouraged. **Initiating talk for learning:** Learners in ability groups discuss the strategies that can be used to mitigate the effects of climate change on crop production and present their findings to the whole class. Groups with challenges should be assisted with guiding questions and other resources and materials to assist them in their activity. Groups who can provide detailed explanations of their ideas should be encouraged.		
Teaching and Learning Materials	• Videos/pictures on the effects of climate change on food security and their mitigating strategies • Climate Change textbooks • Notebook	• Computer • Projector	

Subject AGRICULTURE
Strand 4 AGRICULTURE, HEALTH AND ENVIRONMENT
Sub-Strand 1 HEALTH ISSUES IN CROP PRODUCTION

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
1.4.1.LO.1		
Use the knowledge and skills acquired to produce healthy and quality food crops for human consumption.	**Communication, collaboration, leadership** and **manipulative skills** of learners will be enhanced as they watch video/pictures, involve in group activities and report writing. **Digital literacy, communication, collaboration, leadership** and **manipulative skills** will be re-enforced while learners undertake field practicals, group activities, portfolio building and presentation.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL**: Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different

		capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Identify their own capabilities and qualities. • Provide positive support for learners having difficulties with self-regulation. • Manage their thoughts and behaviors. • Manage their work effectively. • Work together in groups and with partners. **National Values:** • Honesty, fairness, diligence, acceptance, collaboration, responsibility, patriotism, cleanliness and inclusiveness will be re-enforced. • Responsibility, cleanliness, sense of belongingness, diligence, discipline and patriotism will be encouraged.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
1.4.1.CS.1	1.4.1.L1.1	1.4.1.AS.1
Demonstrate knowledge, understanding and skills of basic farm hygiene and sanitation in crop production.	**Explain the meaning and importance of farm hygiene and sanitation and its effect on crop production.** **Initiating talk for learning**: In mixed-ability/mixed-gender groups (where applicable) learners brainstorm to come up with the meaning of farm hygiene and sanitation. Ensure that all learners fully participate in the discussions. Learners with difficulty should be assisted with clues and leading questions to come up with their explanations. Talented learners should be challenged to delve deeper with probing questions to come up with more explanations for farm hygiene and sanitation. **Experiential learning:** Learners in gender-based groups visit a nearby crop farm to observe the farm hygiene and sanitation practices carried out on the farm or watch videos/pictures on the farm environment to see some of the activities and procedures that are carried out on the farm for maintenance of farm hygiene and sanitation. Ensure that all learners strictly adhere to the farm safety protocols during the visit. Learners with difficulty should be assisted. Learners who can undertake some of the farm hygiene activities such as weeding, application of pesticides etc. should be allowed to do so under the strict supervision of the teacher or the farm technician. **Collaborative learning**: Learners in mixed-gender groups discuss the sources of contamination and pollution on the farm and write a report for plenary presentation in class. The group members should be encouraged to elect leaders who will take lead roles in the report writing and the presentation. Groups with difficulties should be assisted with links to internet resources and other learning materials to assist them in their work.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	Initiating talk for learning: Learners in mixed-ability groups discuss the importance of farm hygiene and sanitation activities at the farm site and during the various stages of crop production. Ensure that all learners actively participate in the activity. Use leading questions to encourage learners with difficulty to come up with the importance of farm hygiene and sanitation. Use probing questions to challenge learners who are capable of delving deeper and providing a detailed explanation. **Initiating talk for learning**: Learners in the mixed-gender groups discuss the effect of poor hygiene and sanitation on crop production. Examples: Health effects on humans and animals, rotting/spoilage of crops, disease and pest build-up, increase in cost of production, death of humans and animals, foul smell on the farm, water contamination, etc. Assist groups with difficulties with links to internet resources and other learning materials to assist them with the activity.	
	1.4.1.L1.2	1.4.1.AS.2
	Describe the farm hygiene and sanitation activities in crop production. **Initiating talk for learning**: In mixed-gender/ability groups (where applicable) learners brainstorm to come up with examples of activities that are carried out to keep their backyard gardens and school farms clean. Guide learners with difficulty with leading questions to help them come up with examples. Encourage all learners to participate. Learners who can provide detailed information should be encouraged to do so. **Collaborative learning**: Learners in mixed-gender groups discuss farm hygiene and sanitation activities at the farm site and during the various stages of crop production. Learners then build a portfolio on farm hygiene and sanitation activities at the farm and during the various stages of crop production for assessment. Ensure that all learners actively participate in the portfolio building. Encourage talented learners to take lead roles and also assist learners with difficulties.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	Initiating talk for learning: Learners in mixed-ability/mixed-gender groups (where applicable) discuss the tools, equipment and chemicals required for undertaking farm hygiene and sanitation activities at the farm site and during the various stages in crop production. Example: cutlass, rake, dustbins, disinfectants, powered soap, insecticides, fungicides, herbicides etc. Teachers should use pictures or realia of some of the farm tools, equipment and chemicals to guide learners with difficulty to come up with further examples of the tools for maintaining farm hygiene. Challenge talented learners to give more examples. Use probing questions to guide learners to explain the functions of the tools identified. Strict safety measures should be adhered to when handling the chemicals.	
	1.4.1.L1.3	1.4.1.AS.2
	Apply farm hygiene and sanitation principles in the crop production process. **Experiential learning**: Learners in gender-based/mixed ability groups (where applicable) undertake farm hygiene and sanitation activities at the school farm or a nearby farm under the guidance of a technician. Ensure that all learners actively participate in activities such as weeding, pest control, etc. Guide learners with difficulties. Ensure strict adherence to all the safety protocols on the farm to prevent injuries. Learners build a portfolio of their activities at the farm and present it in a plenary session in the class. **Initiating talk for learning:** Learners in mixed-ability groups discuss the appropriate periods to undertake farm hygiene and sanitation activities in crop production. For instance, field preparation activities such as land clearing, seed and planting materials management, pest control etc. Learners identify specific farm activities and their appropriate farm hygiene activities. Learners with difficulty should be assisted with leading questions to guide them to come up with their examples.	Level 1 Recall Level 2 Skills of conceptual understanding Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**

	Collaborative learning: Learners in mixed-ability groups discuss the importance of performing farm hygiene and sanitation activities concerning the period they are undertaking. For instance, post-harvest handling and storage of crops to improve shelf life, proper disposal of waste after harvesting to prevent pest build-up in the next planting season, etc. Use leading questions and clues to guide learners with difficulty to give scenarios that call for specific farm hygiene activities. Challenge talented learners to give further details.	
Teaching and Learning Materials	• Video/pictures on the farm environment and activities and procedures that are carried out on the farm • Realia (brushes, brooms, rakes, disinfectants) • Pictures of chemicals and tools for undertaking farm hygiene and sanitation activities at the farm site • Video/pictures on farm hygiene and sanitation activities at the farm site and at the various stages of crop production • Tools, equipment and chemicals for undertaking hygiene and sanitation activities at the farm site and at various stages of crop production	

Subject AGRICULTURE
Strand 4 AGRICULTURE, HEALTH AND ENVIRONMENT
Sub-Strand 2 HEALTH ISSUES IN ANIMAL PRODUCTION

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
1.4.2.LO.1		
Use the knowledge and skills acquired to improve animal production activities.	**Digital literacy, communication, collaboration** and **leadership skills** will be promoted as learners watch video/pictures, undertake group activities, report writing and presentation. **Digital literacy, communication, collaboration, leadership** and **manipulative skills** will be further enhanced while learners undertake field practicals, involve in group activities, build portfolios and presentation of reports.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL**: Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different

		capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Identify their own capabilities and qualities. • Provide positive support for learners having difficulties with self-regulation. • Manage their thoughts and behaviors. • Manage their work. • Work together in groups and with partners. **National Values:** • Responsibility, cleanliness, sense of belongingness, diligence, discipline and patriotism will be enhanced.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
1.4.2.CS.1	1.4.2.LI.1	1.4.2.AS.1
Demonstrate knowledge, understanding and skills of basic farm hygiene and sanitation in animal production.	**Explain the meaning and importance of farm hygiene and sanitation and its effect on animal production.** **Initiating talk for learning**: Learners into ability groups (where applicable) to brainstorm to come up with the meaning of farm hygiene and sanitation in animal production. Provide clues and leading questions to guide learners with difficulty in coming out with the meaning of farm hygiene in animal production. **Experiential learning**: learners in gender-based groups visit a nearby animal farm to observe and take part in some of the activities to maintain farm hygiene or watch videos/pictures recording/pictures of the farm environment and activities and procedures that are carried out on the farm. Learners should be encouraged to fully participate in the activities. Learners should observe all safety protocols to prevent any injuries on the farm. Learners with hearing or sight problems should be assisted by placing them at a vantage place to aid seeing and hearing. Challenge learners with better understanding to delve deeper to give further understanding. **Collaborative learning**: Learners in mixed-gender groups discuss the sources of contamination on the animal farm and write a report for plenary presentation in class. Let the talented learners lead the group discussions to allow learners with difficulty to draw inspiration from them. Use pictures and leading questions to guide learners with difficulty in identifying the sources of contamination. **Initiating talk for learning:** Learners in mixed-ability groups discuss the importance of farm hygiene and sanitation activities at the farm site and during the various management practices in animal production. Ensure that all learners actively participate in the discussions. Use probing questions to guide learners with difficulty in coming up with the importance of maintaining farm hygiene in animal production. Challenge talented learners to explain their ideas.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	Initiating talk for learning: Learners in mixed-gender groups to discuss the effects of poor hygiene on animal production. Show pictures of poorly managed farms with animals showing signs and symptoms of diseases caused by poor hygienic conditions and ask learners to assess the effects of poor hygienic conditions on farm animals. Use leading questions to help elicit responses from learners with difficulties. Capable learners should be encouraged to provide further explanations and examples of the effect of poor sanitation on animal production.	
	1.4.2.LI.2	1.4.2.AS.2
	Discuss the farm hygiene and sanitation activities in animal production. **Initiating talk for learning**: Learners in mixed-ability groups brainstorm to come up with examples of activities that are carried out to keep their animal pens clean. Use leading questions to guide learners to tell how they take care of their farm animals at home to keep them clean and healthy. Show pictures of some of the farm hygiene and sanitation activities to learners with difficulty observing to come up with some of the activities carried out to maintain farm hygiene in animal farms. **Collaborative learning**: Learners in mixed-gender groups discuss farm hygiene and sanitation activities at the farm site and during the various management practices in animal production. Learners then build a portfolio on the farm hygiene and sanitation activities at the farm and during the various management practices in animal production for assessment. Support groups with difficulties with links to online resources and other learning materials to assist them in their activities. Encourage learners who are capable of coming up with detailed examples and information. **Initiating talk for learning**: Learners in mixed-ability groups discuss the tools, equipment and chemicals required for undertaking farm hygiene and sanitation activities at the farm site and during the various management practices in animal production. Show realia and pictures of tools, equipment and chemicals used for carrying out farm hygiene and sanitation operations to guide learners with difficulty in identifying some of the tools and equipment and their functions. Learners who are	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	talented and can give further examples and their functions. Adhere to strict safety precautions when handling the chemicals. **Project-based learning: Learners** in mixed-ability groups identify various farm hygiene tools, equipment and chemicals and their functions from their homes and community to build a portfolio and present it in class. Encourage active participation of all learners in the activity.	
	1.4.2.LI.3	1.4.2.AS.3
	Apply farm hygiene and sanitation principles in the animal production process. **Initiating talk for learning:** Learners in mixed-ability groups identify the activities involved in keeping their school animal farms or farm animals in their homes and their pens clean and tidy. Provide learners with difficulty with clues or leading questions to guide them to come up with some examples of activities such as grooming, ventilation, vaccination etc. Use pictures or videos of some of the activities to guide learners to identify and describe the hygienic and sanitation activities. **Experiential learning:** Learners in gender-based groups undertake farm hygiene and sanitation activities at the school animal farm or a nearby animal farm under the guidance of a technician. Ensure active participation of all learners in the hygiene and sanitation activities. Ensure that learners who can perform the tasks play leading roles to encourage learners with difficulty to draw inspiration from. Learners then build portfolios on their activities at the farm and present them in a plenary session in the class. **Collaborative learning**: Learners in mixed ability groups discuss the biosecurity measures such as controlling access to the farm, proper quarantine measures, etc., carried out in the animal farm for disease prevention or reduction of spread. Guide learners with difficulty with scenarios and clues to assist them in identifying some of the biosecurity measures carried out on animal farms. Challenge talented learners with probing questions to come up with detailed explanations of the biosecurity activities identified.	Level 1 Recall Level 2 Skills of conceptual understanding Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**

	Initiating talk for learning: Learners in mixed-ability groups discuss and analyse vaccination as a way to prevent diseases in farm animals in their school animal farms or farm animals in their homes. Provide learners with difficulty with clues or use leading questions to guide them to describe how vaccination is carried out**.**	
Teaching and Learning Materials	• Videos/pictures on the farm environment and activities and procedures that are carried out on the animal farm • Realia (brushes, brooms, rakes, disinfectants) • Pictures of chemicals and tools for undertaking farm hygiene and sanitation activities at the animal farm • Video/pictures on farm hygiene and sanitation activities at the animal farm and during the management practices in animal production • Tools, equipment and chemicals for undertaking hygiene and sanitation activities at the animal farm site and during the various management practices in animal production	

Subject AGRICULTURE
Strand 5 AGRICULTURAL ECONOMICS, AGRIBUSINESS AND COMMUNICATION
Sub-Strand 1 ECONOMICS FOR AGRICULTURE

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
1.5.1.LO.1		
Use the knowledge acquired to describe the principles of Agricultural Economics and establish a school business enterprise.	**Communication, collaboration, critical thinking** and **leadership skills** will be acquired as learners engage in group discussions. **Digital literacy skills** will be enhanced as learners surf the internet. Use of **collaboration, digital literacy, leadership, critical thinking** and **communication skills** will be reinforced as learners discuss economic properties of the farm, work in groups, watch video/pictures and write reports. **Communication, creative, critical thinking, leadership** and **collaborative skills** will be promoted during brainstorming, field visits and report writing.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL**: Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different

		capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Set goals and work to achieve them. • Identify their own capabilities and qualities. • Provide positive support for those having difficulties with self-regulation. • Be aware of real-world challenges • Relate classroom activities to their personal goals. **National Values:** • Integrity, accountability, transparency, probity, diligence and honesty will be emphasized.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
1.5.1.CS.1	1.5.1.LI.1	1.5.1.AS.1
Demonstrate knowledge and understanding of the meaning of the basic principles of Agricultural economics.	**Explain the meaning and importance of the basic principles of Agricultural economics.** **Think-pair-share**: Learners individually think about what they know about **Agricultural Economics** and share with a peer in their group. Teachers should guide learners with difficulties with leading questions that will help them to come up with the meaning, principles, factors and importance of **Agricultural Economics**. Confident learners should be guided with probing questions to give further explanations. The teacher should also assign roles equitably to learners in the groups. **Inquiry-based learning:** In mixed-gender groups, learners surf for information from the Internet on agricultural economics, its principles, importance and factors. They then discuss their findings in class. The teacher should help learners with suitable website links so that they can access the information needed for discussion. The teacher should monitor learners not to veer into unapproved sites. The teacher should ensure that all learners fully participate in the activity. Confident learners should be given leading roles in discussing their findings.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
	1.5.1.LI.2	1.5.1.AS.2
	Discuss the farm as an economic unit. **Managing talk for learning:** Learners in mixed-ability groups discuss the importance of farm as an economic unit and the inter-relationship(s) between the economic properties of a farm. The teacher should use pictures, show videos or documentaries that will provide information on the farm as an economic unit and their inter-relationship(s). Learners with visual or hearing difficulties should be given the needed support when viewing pictures, videos or documentaries. **Project-based learning:** The teacher puts learners in mixed-ability groups and tasks them to identify an agricultural enterprise on their school campus or community, find out why it is an economic unit and write a report on it. Teachers should assist	Level 1 Recall Level 2 Skills of conceptual understanding Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**

	learners with examples of questions to ask and observations to make to enable them to identify why the farm is an economic unit. All learners should be encouraged to take part in the task. Challenge learners who can ask further questions besides what the teacher has given on why the farm is considered an economic unit to do so.	
	1.5.1.LI.3	1.5.1.AS.3
	Apply the principles of Agricultural economics in the establishment and management of an agricultural enterprise. **Think-pair-share**: Learners individually brainstorm to come up with the meaning of agricultural enterprise and share their findings with their peers. The pair should then search the Internet for information on the steps involved in setting up an agricultural enterprise and how the principles of Agricultural enterprise are applied. Learners should be supported with leading questions to help them explain the meaning of agricultural enterprise. Where possible, the teacher should support learners with relevant websites or charts/pictures of the steps involved in setting up an agricultural enterprise and how the principles of Agricultural enterprise are applied. The teacher should monitor the content of what learners browse. Encourage learners with the ability to use the Internet to assist their peers. **Project-based learning:** The teacher should put learners in mixed-ability groups to list the various principles and analyse how they affect Agricultural enterprise for presentation in class. The teacher should assist learners in analysing how the principles affect Agricultural enterprise. All learners should take part in preparation before and during the presentation. Some learners should be selected to play leading roles in the group work. Learners should respect and tolerate each other's views.	Level 1 Recall Level 2 Skills of conceptual understanding Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**
Teaching and Learning Materials	• Functional internet connectivity • Computer • Projector	• Notebook • Pens

Subject AGRICULTURE
Strand 5 AGRICULTURAL ECONOMICS, AGRIBUSINESS AND COMMUNICATION
Sub-Strand 2 COMMUNICATION IN AGRICULTURE

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
1.5.2.LO.1		
Use the knowledge acquired to describe the concept of Agricultural communication.	**Teamwork, leadership, critical thinking, digital literacy** and **communication skills** will be acquired/re-enforced during group work, surfing for information online and watching videos/pictures. **Critical thinking, collaboration, digital literacy, communication** and **leadership skills** will be promoted during group discussions.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL:** Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different

		capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Identify their own capabilities and qualities. • Provide positive support for learners having difficulties with self-regulation. • Listen to their peers' opinions and express disagreements in constructive ways. • Resolve interpersonal conflicts with each other. • Relate classroom activities to their personal goals. **National Values:** • Respect, tolerance, self-control, integrity, leadership and self-confidence will be promoted.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
1.5.2.CS.1	1.5.2.L1.1	1.5.2.AS.1
Demonstrate knowledge and understanding of the concept of communication in Agriculture.	**Explain the meaning and importance of Agricultural communication.** **Building on what others say:** Learners work in pairs to bring out the meaning, branches and importance of communication as well as strategies for effective communication after watching a video or documentary on agricultural communication. Learners discuss their observations and ideas by building on what their peers have said. The teacher should guide learners with difficulties with leading questions that will help them to come up with the meaning, branches, importance and strategies for effective communication. The teacher should ensure that each student takes an active part in the discussion. **Structuring talk for learning:** Learners work in mixed-ability groups to bring out and discuss the meaning and importance of agricultural communication. The teacher should assist learners with difficulties with leading questions that will help them to come up with the meaning and importance of agricultural communication. Learners who can only define and list the importance of Agriculture should be allowed to do so. Those who can give further details on the meaning and importance of agricultural communication should be encouraged to do so.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
	1.5.2.L1.2	1.5.2.AS.2
	Outline the strategies for effective communication and the various branches of communication in Agriculture **Managing talk for learning:** Put learners in mixed-ability groups to watch a documentary on strategies for effective communication and discuss what they have observed in their groups. Learners should be supported to list the breeds and factors that affect the distribution of farm animals. Others should be guided to explain the factors that affect the distribution of farm animal breeds in Ghana. Allow those who can discuss the factors that influence the distribution of farm animal breeds in West Africa on their own to do so.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	Enquiry-based learning: In pairs, learners investigate using the Internet for information on the strategies, branches and social media platforms for communication and report on their findings. The teacher should support learners with videos that demonstrate the use of social media platforms such as Facebook, WhatsApp, TikTok, YouTube, X, Instagram and LinkedIn. The teacher should also allow some learners to demonstrate how to communicate effectively in class by reporting on the investigations made via the Internet.		
Teaching and Learning Materials	• Functional internet connectivity • Computer • Projector	• Notebook • Pens	• Farm • Textbooks on Agricultural economics

Subject AGRICULTURE
Strand 5 AGRICULTURAL ECONOMICS, AGRIBUSINESS AND COMMUNICATION
Sub-Strand 3 AGRIBUSINESS MANAGEMENT

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
1.5.3.LO.1		
Use the knowledge acquired to describe agribusiness management.	**Collaborative, digital literacy** and **communication skills** will be promoted during the watching of video/pictures and group discussion. **Critical thinking** will be enhanced as learners brainstorm on the meaning and importance of agribusiness. **Digital literacy, teamwork, leadership skills** and **communication skills** will be enhanced as learners watch video/pictures, surf for information online, undertake group work and write reports.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL:** Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to:

		• Set goals and work to achieve them. • Identify their own capabilities and qualities. • Provide positive support for learners having difficulties with self-regulation. • Be aware of real-world challenges. • Relate classroom activities to their personal goals. • Develop their own strategies on how to complete a task or learn a new task. **National Values:** • Trust, honesty, accountability, transparency, probity, integrity and diligence will be acquired.
1.5.3.LO.2		
Prepare a business plan.	**Digital literacy, communication, collaborative,** and **critical thinking skill**s will be acquired as learners search for information online on business plan and during group discussions.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality.

		SEL: Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Set goals and work to achieve them. • Identify their own capabilities and qualities. • Provide positive support for others having difficulties with self-regulation. • Be aware of real-world challenges. • Develop their own strategies on how to complete a task or learn a new task. **National Values:** • Self-reliance, resourcefulness, creativity, innovativeness, accountability, value addition and diligence will be promoted.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
1.5.3CS.1	1.5.3.LI.1	1.5.3.AS.1
Demonstrate knowledge and understanding of activities involved in agribusiness management.	**Explain the meaning and importance of agribusiness management**. **Problem-based learning**: The teacher puts learners in mixed-ability groups and challenges them to find out the meaning and importance of agribusiness management via internet search. Learners then make a presentation on how to convince a friend to choose a particular agribusiness enterprise. All learners should be encouraged to take part in the presentation. The teacher should monitor learners to ensure that they use the right websites. Where necessary, the teacher should support learners with the right websites. **Think-pair-share:** Learners individually think about the meaning and importance of agricultural agribusiness management and write down their answers. The teacher puts learners in pairs to discuss the meaning and importance of agricultural agribusiness management. The teacher should provide extra support to some learners to explain the meaning and importance of agribusiness management. The teacher should allow others to discuss the importance of agribusiness management. Talented learners should be made to assist others in understanding the meaning and importance of agricultural agribusiness management.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
	1.5.3.LI.1	1.5.3.AS.1
	Catalogue the activities carried out in agribusiness management and outline their functions. **Problem-based learning:** The teacher puts learners in mixed-ability groups and challenges them to find out the activities carried out in agribusiness management, the functions of these activities and factors to consider in agribusiness management via an internet search. Learners then make a presentation on how to harness the factors that affect the establishment of agricultural development to promote agribusiness. All learners should be encouraged to take part in the presentation. The teacher should monitor learners to ensure that they use the	Level 1 Recall **Level 2 Skills of conceptual understanding** Level 3 Strategic reasoning Level 4 Extended critical thinking and reasoning

	right websites. Where necessary, the teacher should support learners with the right websites. **Think-pair-share**: Learners individually think about the activities carried out in agribusiness management, the functions of these activities and factors to consider in agribusiness management and share with a peer in their group. They then surf the internet or watch a video on the activities carried out in agribusiness management. The teacher should support learners after surfing the internet or watching the video to use the activities observed to develop or establish a named animal or crop business e.g., Guinea fowl business or soybean business. The teacher should provide learners with all the necessary support they need to surf the internet or watch a video on how to develop a business plan.	
Teaching and Learning Materials	• Functional internet connectivity • Computer • Textbooks on Agribusiness management	• Pens • Notebook

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
1.5.3.CS.3	1.5.3LI.1	1.5.3AS.1
Demonstrate the knowledge, understanding and skills of writing a Business Plan.	**Describe the procedure for writing an agribusiness plan.** **Think-pair-share:** Learners individually think about what they know about business plans and share with a peer in their group. They then surf the internet for information on the meaning, items and how a business plan is developed, for them to develop their agribusiness plan for a named animal or crop production, e.g., poultry or maize production. The teacher should provide learners with all the necessary support they need to surf the internet on how to develop a business plan. The teacher should show learners samples of a business plan and guide them in developing an agribusiness plan. **Problem-based learning**: In mixed-ability group, learners watch a video or documentary on how to develop an agribusiness plan and discuss the procedures involved in preparing the plan. The teacher then guides learners to develop a business plan to source for a loan from the bank to start an Agricultural enterprise. Learners with visual and hearing challenges should be supported. Where necessary, the teacher should invite an expert to give a talk and practically take learners through how to develop a business plan. Learners should be allowed to express themselves and their views should be respected.	Level 1 Recall **Level 2 Skills of conceptual understanding** Level 3 Strategic reasoning Level 4 Extended critical thinking and reasoning
Teaching and Learning Materials	• Functional internet connectivity • Computer • Notebook	• Pens • Textbooks on Agribusiness management

YEAR TWO

Subject **AGRICULTURE**
Strand 1 **CONCEPT OF AGRICULTURE IN AN INDUSTRIALIZING SOCIETY**
Sub-Strand1 **AGRICULTURE AND SOCIETY**

Learning Outcomes	21st Century Skills and Competencies	GESI[3], SEL[4] and Shared National Values
2.1.1.LO.1		
Use the knowledge acquired to explain the importance of Agriculture development to national economy.	**Digital literacy, communication, critical thinking, leadership**, and **collaborative skills** will be promoted as learners take part in group activities and research work. **Digital literacy, communication, critical thinking, leadership** and **collaborative skills** will be enhanced as learners take part in group activities and report presentation.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL**: Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Evaluate various real-world scenarios and make decisions based on the information at hand. • Develop their own strategies to complete a task or learn a new task.

		• Be aware of real-world problems and issues and apply what they are learning. • Be aware of real-world challenges. • Identify the better ways of presenting their entrepreneurship ideas. **National Values:** • Patriotism, diligence, appreciation, confidence and good morals will be fostered. • Gender based groups encourage all learners to value and work in favour of a democratic and inclusive society. Involvement of all learners will give opportunity to individual learners.
2.1.1.LO.2		
Use the knowledge acquired to identify the various land tenure systems and their effects on agricultural production.	**Digital literacy, critical thinking, creative, collaborative, leadership** and **communication skills** will be enhanced as learners engage in questionnaire development, take part in group work and surf the internet for information.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL:** Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different capabilities, abilities and

		gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Acquire management skills and practice different management strategies. • Understand the cause and effects of environmental degradation. • Acquire and practice skills of environmental integrity. **National Values:** • Honesty, transparency, trustworthiness, resourcefulness, integrity, inclusiveness and self-control will be acquired • Patriotism and ownership will be acquired.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
2.1.1.CS.1	2.1.1.LI.1	2.1.1.AS.1
Demonstrate knowledge and understanding of the meaning, importance, roles and stages of Agriculture development.	**Explain the meaning, importance and stages of Agriculture development.** **Initiating talk for learning:** • Learners in mixed ability groups surf the internet and brainstorm to come up with the meaning of Agriculture development. • In the same groups, learners surf for information and discuss the importance of Agriculture development in Ghana, West Africa and the World. **Structured talk for learning:** Learners in gender-based groups watch a short documentary on Agricultural development and discuss the stages and challenges of Agriculture development, and suggest possible solutions. **Project-based learning:** Learners in mixed ability groups undertake research on how Ghana's Agriculture has developed through the years and present their report in a plenary session in the class. All learners should be encouraged to discuss the roles of men, women, and persons with disabilities in the agricultural development process. They can also reflect on how poor rural farmers manage the transition from one stage to the other.	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
	Discuss the roles of governmental and non-governmental organizations in Agricultural development. **Initiating talk for learning:** • Learners in mixed ability groups surf the internet and brainstorm to come up with the meaning of Agriculture development. • In the same groups, learners surf for information and discuss the importance of Agriculture development in Ghana, West Africa and the World.	Level 1 Recall **Level 2 Skills of conceptual understanding** Level 3 Strategic reasoning Level 4 Extended critical thinking and reasoning

	Structured talk for learning: Learners in gender-based groups watch a short documentary on Agricultural development and discuss the stages and challenges of Agriculture development, and suggest possible solutions. **Project-based learning:** Learners in mixed ability groups undertake research on how Ghana's Agriculture has developed through the years and present their report in a plenary session in the class. All learners should be encouraged to discuss the roles of men, women, and persons with disabilities in the agricultural development process. They can also reflect on how poor rural farmers manage the transition from one stage to the other.	
Teaching and Learning Materials	• Functional internet connectivity • Textbooks on Agriculture development	• Computer • Notebook	• Pens

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
2.1.1.CS.2	2.1.1.LI.1	2.1.1.AS.1
Demonstrate knowledge and understanding of land tenure systems and their effect on Agriculture production.	**Describe the land tenure systems in Ghana.** **Structuring talk for learning**: Learners in mixed-ability groups brainstorm to come up with the meaning of land tenure systems in Agricultural production. **Experiential learning:** • Learners in mixed-gender groups mention the types of land tenure system being practiced in their communities. • Learners then surf the internet to identify the types, characteristics, advantages and disadvantages of land tenure systems in Ghana. **Collaborative learning:** Learners in mixed-gender groups discuss the characteristics, advantages and disadvantages of the land tenure systems identified and make a presentation to the class. All leaners should be encouraged to discuss the types of land tenure systems that gender neutral and promote inclusivity.	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
	Explain the effects of land tenure systems on Agricultural production. **Experiential learning (where applicable):** • Learners in gender-based groups develop questionnaires with a maximum of 5 questions to gather information on the effects of land tenure system on Agricultural production in the school community. • Learners then analyse their results and write a report on the effect of land tenure system on Agricultural production. **Initiating talk for learning:** Learners surf the internet to come up with information on the effect of land tenure system in Ghana and discuss the information.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**

	All category of leaners should be encouraged to discuss the effects of the various land tenure systems on the operations of women and persons with disabilities involved in Agriculture.		
Teaching and Learning Materials	• Functional internet connectivity • Textbook on land tenure systems	• Computer • Notebook	• Pens

Subject AGRICULTURE
Strand 1 CONCEPT OF AGRICULTURE IN AN INDUSTRIALIZING SOCIETY
Sub-Strand 2 AGRICULTURE AND INDUSTRY

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
2.1.2.LO.1		
Use the knowledge acquired to identify the industries in crop production	**Creative thinking, communication, leadership, digital literacy** and **collaborative skills** will be promoted as learners surf the internet for information online, work in groups and create charts/tables. **Creative, digital literacy, critical thinking, communication, leadership** and **collaborative skills** will be re-enforced as learners work in groups, write reports and undertake the case studies.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL:** Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different

		capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Identify their own capabilities and qualities. • Explore various opportunities open to them as they learn. • Manage their thoughts and behaviors in everyday life and business enterprises. **National Values:** • Honesty, resourcefulness and self-control to surf for information from the internet as well as tolerance and respect for will be acquired. • Tolerance, self-confidence and respect for all in group work will be promoted.
2.1.2.LO.1		
Use the knowledge acquired to identify the industries in animal/fish production	**Creative thinking, communication, leadership, digital literacy** and **collaborative skills** will be fostered as learners surf the internet for information, work in groups and create charts/tables. **Creative, digital literacy, critical thinking, communication, leadership** and **collaborative skills** will be enhanced as learners work in groups, write reports and undertake case studies.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture.

		• Interrogate their stereotypes and biases. about gender division of labour in Agriculture • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL:** Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Identify their own capabilities and qualities. • Explore how they learn and as they learn. • Manage their thoughts and behaviors in Everyday life. • Manage their private life and work. **National Values:** • Honesty, resourcefulness and self-control to surf for information from the internet as well as tolerance and respect for will be acquired and promoted. • Tolerance, self-confidence, inclusion and respect for all in group work will be promoted.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
2.1.2.CS.1	2.1.2.LI.1	2.1.2.AS.1
Demonstrate knowledge and understanding of the industries of crop production.	**Examine the industries of crop production.** **Managing talk for learning:** Learners in mixed-ability groups, brainstorm to come up with types of industries in crop production. All learners should be prompted that both males and females including persons with disabilities can be active drivers of industries in crop production. This is to dispel misconceptions and gender stereotypes. **Collaborative learning:** Learners in mixed-ability groups identify factories in their community or country that uses produce from crop production. **Problem-based learning:** • Learners in mixed ability groups discuss the raw materials required by the identified industries. • Learners individually create a table/chart showing the industries in crop production and the raw materials they use. All learners should be encouraged to identify agro-based factories that women and people with disabilities have established in their communities. Leaners should also discuss how to overcome the difficulties in getting raw materials by the women and the people living with disabilities.	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
	Discuss the importance of raw and waste materials from crop production to the industry **Experiential Learning**: Learners in mixed-ability groups visit a nearby agro-based industry/watch videos/pictures on the use of raw materials and Agriculture wastes in their processing activities. They then discuss the importance of raw materials and waste from crop production to the industries.	Level 1 Recall Level 2 Skills of conceptual understanding Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**

	Collaborative learning: Learners in the mixed-ability groups prepare and present a report on their discussion. **Project-based learning (homework):** Learners in mixed-ability groups embark on a case study on the industrial uses and importance of cash crops grown in their locality and present a portfolio on their case study. Teachers should ensure that the videos/pictures used do not enforce stereotyping and if they do, the teacher should discuss them with the learners. Teachers should endeavour to involve introverts and learners with speech problems in the report presentations.	
Teaching and Learning Materials	• Realia (cassava, tomatoes, cocoa, pineapple, shear, cola etc) • Video/pictures of agro based industries processing activities.	

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
2.1.2.CS.2	2.1.2.LI.1	2.1.2.AS.1
Demonstrate knowledge and understanding of the industries in animal/fish production	**Explore the industries of animal/fish production.** **Managing talk for learning**: Learners in mixed-ability groups brainstorm to come up with types of industries in animal/fish production. **Think-pair-share:** Learners in pairs identify factories in their community and country that use produce from animal/fish production. **Problem-based learning:** learners in mixed ability groups discuss the raw materials required by the identified industries. Learners individually create a Table/chart showing the industries in animal/fish production and the raw materials they use and present their work to the class. Learners should be encouraged to identify agro-based factories that are owned by women and people with disabilities among others, in their communities. Leaners should also discuss the extent of difficulty in getting raw materials by the women and the people living with disabilities. The teacher should endeavour to involve introverts and learners at all levels of abilities in the class discussion and report presentation.	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.AS2
	Discuss the importance of raw and waste materials from animal production to industry. **Experiential Learning**: Learners in mixed-ability groups visit a nearby agro-based industry which processes animal products/watch videos/pictures on the use of raw materials and Agriculture waste in their processing activities. **Collaborative learning**: Learners in the mixed ability groups discuss the importance of raw materials and waste from crop production to the industries and present a report on their discussion.	Level 1 Recall Level 2 Skills of conceptual understanding Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**

	Project-based learning (Homework): Learners in mixed-ability group embark on a case study on the industrial uses and importance of selected animals which are reared in their locality and present a portfolio on their case study. Teachers should ensure that the videos/pictures used do not enforce stereotyping and if they do, the teacher should discuss them with the learners. Teachers should ensure that learners who have allergies to animal products like fur and blood are psychologically prepared and remedies made available before embarking on the farm visit.		
Teaching and Learning Materials	• Video/pictures of agro based industries • Pictures of examples of animals reared in the communities • Pictures of animals reared in the communities.	• Videos/pictures of activities in animal processing industries. • Realia: examples of animal waste (blood, bones, hooves, fur, skin etc).	

Subject AGRICULTURE
Strand 2 MODERN TECHNICAL AND MECHANISED AGRICULTURE
Sub-Strand 1 MODERN TECHNICAL AGRICULTURE

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
2.2.1.LO.1		
Use the knowledge and skills acquired to explain the meaning and importance of survey and mapping in Agriculture.	**Critical thinking, collaborative, communication, leadership** and **digital literacy skills** will be acquired as learners brainstorm, work in groups and present reports. **Creative, manipulative, communication, collaborative** and **digital literacy skills** will be enhanced as learners work in groups, surf the internet and write reports.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL**: Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different

		capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Evaluate various real-world scenarios and make decisions based on the information at hand. • Develop their own strategies to complete a task or learn a new task. • Be aware of real-world problems and issues and apply what they are learning. • Choose acceptable ways of presenting their entrepreneurship ideas. **National Values:** • Respect for all, tolerance and discipline will be promoted whilst working in groups as well as responsibility, excellence and self-confidence will be promoted. • Honesty, excellence, discipline, accountability, resourcefulness and self-control will be promoted.
2.2.1.LO.2		
Use the knowledge and skills acquired to prepare the map of a farmstead.	**Creativity, communication, manipulative, collaborative** and **digital literacy skills** will be enhanced as learners engage in discussions and demonstration activities. **Creative, communication, manipulative, collaborative** and **digital literacy skills** will be promoted as learners engage in data collection and prepare maps of farmsteads.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds.

		• Embrace diversity and practice inclusion. • Examine and dispel misconceptions/myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL:** Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Evaluate various real-world scenarios and make decisions based on the information at hand. • Develop their own strategies to complete a task or learn a new task. • Be aware of real-world challenges and issues to apply what they are learning. • Apply their imaginative and drawing skills meaningfully. **National Values:**

		• Self-confidence, self-control, tolerance and discipline will be acquired and enhanced. • Values such as integrity, excellence, responsibility, adaptability, discipline will be acquired.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
2.2.1.CS.1	2.2.1.LI.1	2.2.1.AS.1
Demonstrate the knowledge, understanding and skills of the meaning and purpose of survey and mapping in Agriculture.	**Explain the meaning and importance of survey and mapping in Agriculture** **Talk-pair-share:** In pairs, learners brainstorm to come up with the meaning of survey and mapping in Agriculture. **Collaborative learning:** Learners in mixed-ability groups surf the internet for information on the importance of survey and mapping in Agriculture. Learner presents their report in a plenary session in class for assessment. Teacher should encourage all learners to participate in surfing the internet for information on the importance of survey and mapping in Agriculture.	Level 1 Recall **Level 2 Skills of conceptual understanding** Level 3 Strategic reasoning Level 4 Extended critical thinking and reasoning
	2.2.1.LI.2	2.2.1.AS.2
	Describe survey and mapping instruments and their uses in Agriculture production. **Experiential learning:** In gender-based groups, learners visit a survey site/watch videos/pictures on a surveying process of a land and identify some of the survey instruments used and document them. **Collaborative learning:** Learners in gender-based groups surf the internet to come up with information on the uses of the survey and mapping instruments identified. **Project-based learning:** Learners in gender-based groups create a portfolio on the survey instruments and their uses with pictures. Teachers should ensure that videos/pictures used do not enforce stereotyping and if they do, teachers should discuss them with learners. Teachers should also encourage all learners to be involved in surfing the internet to improve their digital literacy skills.	Level 1 Recall Level 2 Skills of conceptual understanding Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**
Teaching and Learning Materials	• Functional internet connectivity • Computer • Pen	• Textbooks on Agricultural Survey • Videos/pictures of survey site • Pictures/videos of survey and mapping instruments

	• Notebook	• Realia of survey and mapping instruments (survey compass, tape measure, tripod prism, handheld GPS, pin poll)

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
2.2.1.CS.2	2.2.1.LI.1	2.2.1.AS.1
Demonstrate the understanding and skills of the procedure for conducting survey and mapping of farmstead.	**Demonstrate the procedure for conducting survey and mapping of farmstead.** **Initiating talk for learning:** Learners in mixed-ability groups discuss the procedures for conducting survey and mapping of farmstead under the guidance of a resource person. **Experiential learning:** Learners in gender-based groups demonstrate the procedures for conducting survey and mapping of farmstead on the field (just outside the classroom) under the guidance of a technician/resource person observing all the safety protocols. Teacher should encourage female learners and learners with disabilities to actively participate in conducting the survey and mapping of the farmstead.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
	2.2.1.LI.2	2.2.1.AS.2
	Prepare map of a farmstead. **Experiential learning:** In gender-based groups, learners visit a farmstead or watch short documentary on mapping of a farmstead to gather data/information for mapping. **Project-based learning:** Learners in the gender-based learning prepare a map of the farmstead using the data gathered. Learners present and explain their map in a plenary session in the class. Teacher should ensure that all learners participate in preparing a map of a farmstead. Learners who are introverts and those with speech problems should be encouraged to be involved in the plenary presentation of the map of the farmstead in class.	Level 1 Recall Level 2 Skills of conceptual understanding Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**
Teaching and Learning Materials	• Handheld GPS, notebooks, cardboards, pencils etc.	

	• Realia of survey and mapping instruments (survey compass, tape measure, tripod prism, handheld GPS), and protective clothing (safety boots, helmet and reflective safety vest etc.)

Subject AGRICULTURE
Strand 2 MODERN TECHNICAL AND MECHANISED AGRICULTURE
Sub-Strand 2 MODERN MECHANISED AGRICULTURE

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
2.2.2.LO.1		
Use the knowledge acquired to explain the meaning and benefits of irrigation and drainage systems in Agricultural production.	**Digital literacy, communication, critical thinking, leadership** and **collaborative skill**s will be enhanced as learners surf the internet for information, engage in plenary presentation of results and write reports.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **National Values:** Honesty, resourcefulness and self-control, excellence, tolerance, respect and accountability will be enhanced. **SEL:** Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to:

		• Evaluate various real-world scenarios and make informed decisions based on the information at hand. • Develop their own strategies to complete a task or learn a new task. • Be aware of real-world challenges and issues to apply what they are learning. • Apply their imaginative and drawing skills effectively. • Set goals and work to achieve them.
2.2.2.LO.2		
Use the knowledge and skills acquired to operate a simple harvest and post-harvest implements and machinery.	**Digital literacy, communication, leadership** and **critical thinking skills** will be enhanced as learners engage in group discussions and build picture albums. **Digital literacy, communication, leadership** and **critical thinking skills** will be fostered as learners engage in group discussions and creation of tables. **Teamwork, leadership, communication, critical thinking** and **manipulative skills** will be promoted as learners work in groups to operate tools and equipment.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL:** Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to:

		• Pay attention to health and safety procedures in Agriculture. • Be aware of real-world challenges to apply what they are learning. • Develop their own strategies to complete tasks or learn new concepts. **National Values:** • Honesty, resourcefulness, tolerance and respect for all, Integrity, discipline and tolerance will be promoted. • Leadership, dealing with setbacks and excellence will be acquired.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
2.2.2.CS.1	2.2.2.LI.1	2.2.2.AS.1
Demonstrate the knowledge and understanding of the meaning and benefits of irrigation and drainage systems in Agricultural production.	**Explain the meaning and benefits of Agricultural irrigation and drainage systems.** **Think-pair-share**: Learners in pairs brainstorm to come up with the meaning of Agricultural irrigation and drainage systems. **Structuring talk for learning**: Learners in mixed-gender groups surf the internet to gather information on the benefits of irrigation and drainage systems in Agriculture. Learners present their reports in a plenary session in the class. **Collaborative learning:** Learners in mixed-ability groups discuss the problems associated with irrigation and drainage in Agriculture. Learners should discuss the challenges that women and people with disabilities involved in Agriculture face with the provision of irrigation facilities in the communities.	Level 1 Recall **Level 2 Skills of conceptual understanding** Level 3 Strategic reasoning Level 4 Extended critical thinking and reasoning
	2.2.2.LI.2	2.2.2.AS.2
	Describe the methods and uses of irrigation and drainage systems in Agricultural production. **Experiential learning**: Learners in mixed-ability groups visit a nearby farm with irrigation system/watch videos/pictures on irrigation system in Agriculture and discuss the methods of irrigation and drainage systems in Agriculture. **Initiating talk for learning:** Learners in mixed-ability groups discuss the various types of irrigation and drainage equipment used in Agricultural production. **Collaborative learning:**	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	Learners in mixed-ability groups discuss the uses of the various irrigation and drainage systems in Agricultural production. Leaners should discuss the benefits of irrigation facilities to the agricultural activities of women and persons living with disabilities.	
	2.2.2.LI.3	2.2.2.AS.3
	Describe the parts and functions of the irrigation and drainage system in Agriculture production and demonstrate the skills of operating them. **Enquiry-based learning:** Learners in gender-based groups surf the internet to come up with information on the parts and functions of an irrigation and drainage system in Agricultural production. **Project-based learning:** Learners in gender-based groups watch a short documentary on the application of irrigation system for cultivation of a selected crop and create a portfolio on the application of the irrigation system.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**
Teaching and Learning Materials	• Functional internet connectivity, • Computer • Pen • Notebook • Textbooks on Agricultural Irrigation and Drainage Systems • Picture or charts showing different types of irrigation and drainage systems • Sprinklers	• Watering cans • Pipes • Irrigation tiles • Drip irrigation lines • Overhead water tank • Dugout • Video/pictures of irrigation and drainage systems used in Agricultural production

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
2.2.2.CS.2	2.2.2.LI.1	2.2.2.AS.1
Demonstrate knowledge and understanding of harvest and post-harvest implements and machinery.	**Classify harvest and post-harvest implements and machinery** **Initiating talk for learning:** Learners in mixed-ability groups brainstorm to come up with examples of harvest and post-harvest tools, implements and machinery. **Collaborative learning**: Learners in mixed-ability groups classify the tools identified. **Project-based learning:** Learners visit a nearby processing factory/watch video on the harvesting and post harvesting tools, equipment and machinery, and create a picture album on the harvest, post-harvest and storage tools, equipment and machinery in a plenary session in class. Teachers should ensure that the videos/pictures used do not enforce stereotyping and if they do, the teachers should discuss them with the learners. Teachers should encourage learners with speech problems to actively take part in the plenary sessions in class.	Level 1 Recall **Level 2 Skills of conceptual understanding** Level 3 Strategic reasoning Level 4 Extended critical thinking and reasoning
	2.2.2.LI.2	2.2.2.AS.2
	Describe the uses of harvest and post-harvest tools, implements and machinery in Agricultural production **Experiential learning:** Learners in mixed-ability groups embark on a visit to a nearby agro processing factory/watch a video on the uses of harvest, post-harvest and storage tools, implements and machinery to observe the uses of the available harvest, post-harvest and storage tools, implements and machinery in Agriculture production.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	Structuring talk for learning: Learners in mixed-ability groups discuss the uses of the harvest, post-harvest and storage tools, implements and machinery. **Project based learning:** Learners individually create a table showing the harvest, post-harvest and storage tools, implements and machinery and their uses. Learners should discuss the difficulties faced by women and people with disabilities in the use of the harvest and post-harvest tools, implements and machinery. Teachers should make sure the videos/pictures used do not enforce stereotyping and if they do, the teacher should discuss it with the learners.	
	2.2.2.LI.3	2.2.2.AS.3
	Demonstrate the skills in the operation of simple harvest and postharvest implements and machinery use in Agricultural production. **Collaborative learning**: Learners in gender-based groups surf the internet for information on the operations of a simple harvest, post-harvest and storage tools, implements and machinery in Agricultural production and discuss their findings. **Project based learning:** Learners in mixed-gender groups demonstrate how simple available tools and equipment are used in performing harvesting, post-harvesting and storage activity in Agricultural production. Teacher should encourage female learners and learners with disabilities to operate the available simple tools and equipment to the best of their ability.	Level 1 Recall Level 2 Skills of conceptual understanding Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**
Teaching and Learning Materials	• Functional internet connectivity • Pictures/videos of harvest, post-harvest and storage tools, equipment and machinery • Realia (sickle, cutlass, go-to-hell, hoe, chisel) • Pictures/videos on the uses of harvest, post-harvest, storage tools, equipment and machinery • Realia (sickle, cutlass, go-to-hell, hoe, chisel) • Videos/pictures of irrigation and drainage systems used in Agricultural production	

	• Sprinklers, watering cans, pipes, irrigation tiles, drip irrigation lines, overhead water tank, dugout etc.

Subject AGRICULTURE
Strand 3 FOOD PRODUCTION AND NATURAL RESOURCE CONSERVATION
Sub-Strand 1 PRINCIPLES OF AGRICULTURE IN FOOD PRODUCTION

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
2.3.1.LO.1		
Use the knowledge and skills acquired in the management and production of the selected crops.	**Communication, collaborative, digital literacy, leadership, creativity** and **critical thinking skills** will be enhanced as learners brainstorm, work in groups, surf the internet for information and create charts. **Communication, collaborative, digital literacy, critical thinking, creativity** and **innovation skills** will be inculcated as learners make inquiries, surf the internet for information, create tables and cultivate crops.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL:** Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to:

		• Evaluate various production scenarios and make decisions based on the information at hand. • Identify their own capabilities and qualities. • Provide positive support for those having difficulties with self-regulation. • Manage their thoughts and behaviors in everyday life. • Work together in groups or with partners. **National Values:** • Diligence, self-confidence, discipline and excellence will be acquired. • Integrity, discipline, tolerance and excellence will be inculcated.
2.3.1.LO.2		
Use the knowledge and skills acquired on the economic importance and management practices of farm animals to rear selected animals/fish.	**Communication, digital literacy, critical thinking, collaborative** and **leadership skills** will be re-enforced as learners engage in brainstorming, surfing the internet for information and building of portfolios. **Communication, collaborative, leadership, digital literacy cultural identity and global awareness skills** will be fostered as learners interact with farmers, colleagues and surf for information online.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds • Embrace diversity and practice inclusion • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture • Interrogate their stereotypes and biases about gender division of labour in Agriculture • Identify injustice in society, especially in the agricultural sector and advocate for change • Embrace gender equity and equality

		SEL: Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Evaluate various production scenarios and make decisions based on the information at hand. • Identify their own capabilities and qualities. • Provide positive support for those having difficulties with self-regulation. • Manage their thoughts and behaviours. • Work together in groups or with partners **National Values:** • Discipline, responsibility, resourcefulness, adaptability and diligence will be promoted. • Integrity, discipline, tolerance and excellence will be promoted.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
2.3.1.CS.1	2.3.1.LI.1	2.3.1.AS.1
Demonstrate knowledge, understanding and skills of the cultivation of selected crops.	**Explain the economic importance of selected crops.** **Initiating talk for learning:** In pairs, learners brainstorm the meaning of vegetable crops, arable crops, cash crops and ornamentals. **Think-pair-share**: In pairs, learners surf the internet to come up with the economic importance of vegetable crops, arable crops, cash crops and ornamentals and discuss their findings. **Project-based learning:** In mixed-ability groups, learners prepare a chart showing the economic importance of vegetable crops, arable crops, cash crops and ornamentals. Teacher should encourage all learners to actively participate in preparing the charts on the economic importance of the crops.	Level 1 Recall **Level 2 Skills of conceptual understanding** Level 3 Strategic reasoning Level 4 Extended critical thinking and reasoning
	2.3.1.LI.1	2.3.1.AS.2
	Apply the technologies and techniques to cultivate selected crops. **Problem based learning:** In gender-based groups, learners visit a nearby farm/watch video on the techniques of growing selected vegetable crops, arable crops, cash crops and ornamentals. In the same groups, learners tabulate the techniques vis-à-vis the selected crops, **Experiential learning:** Each group prepares a record book on all the techniques used in the cultivation of each crop. Teachers should endeavour to take learners to visit nearby farms which are owned by women and persons with disability to dispel stereotyping in crop production or the visit school farm(s). Videos/pictures used in the class should not enforce stereotyping in crop production, if they do, teachers should discuss them with learners. Teachers should encourage all learners to actively take part in all activities.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**

Teaching and Learning Materials	• Functional internet connectivity to surf for information on the economic importance of vegetable crops, arable crops, cash crops and ornamentals. • Charts and videos showing the economic importance of crops such as food for humans, feed for animals, raw materials for industry etc.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
2.3.1.CS.2	2.3.1.LI.1	2.3.1.AS.1
Demonstrate knowledge, understanding and skills of husbandry of selected animals/fish.	**Outline the economic importance of the selected animal/fish.** **Think-pair-share:** Learners in pairs brainstorm the meaning and objectives of management of farm animals/fish. **Problem-based learning:** Learners in mixed-ability groups surf the internet for information on the classification of farm animals/fish and discuss their findings. **Enquiry-based learning:** In mixed ability group, learners surf the internet to come up with the economic importance of animal/fish production. **Problem-based learning:** In gender-based groups, learners build a portfolio on the economic importance of the various parts of the selected animals/fish. Teacher should involve all learners in the class discussions and portfolio building.	**Level 1 Recall** **Level 2 Skills of conceptual understanding** Level 3 Strategic reasoning Level 4 Extended critical thinking and reasoning
	2.3.1.LI.2	2.3.1.AS.1
	Demonstrate the ability to perform the various management practices involved in the rearing of the selected animal/fish. **Experiential learning:** Learners in mixed-ability groups visit animal/fish farms or watch a documentary on techniques used in managing farms. Learners then build a flow chart on the management practices from the visit or watched documentary. **Problem-based learning**: In mixed-ability groups, learners surf the internet for management practices for the various types of animal/fish farms such as livestock/poultry, fisheries, snailnery, rabbitry, apiary etc. **Structuring talk for learning:** In the same groups, learners discuss the management practices involved in animal/fish production.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**

	Experiential learning (Homework): Learners visit the school farm and have hands-on farm practices on some management practices such as cleaning water and feed troughs, preparing ration, applying medications, pest and disease identifications etc. Teachers should endeavour to take learners to visit farms that will help dispel stereotyping in animal production. Videos/pictures used in the class should not enforce stereotyping in crop production, if they do, teachers should discuss them with learners. Teachers should encourage female learners and learners with disabilities to take part in the hands-on farm practicals in the management practices in animal production and presentation of reports. Learners with allergies to animal products like fur should be taken care of before the visit.	
Teaching and Learning Materials	• Functional internet connectivity • Notebook • Computer • Textbook on Animal Husbandry	• Charts/pictures showing importance of selected animals • Farms in the locality • Mobile phone • Voice recorders	• Pen • School farm • Charts/pictures showing school farms

Subject AGRICULTURE
Strand 3 FOOD PRODUCTION AND NATURAL RESOURCE CONSERVATION
Sub-Strand 2 PRINCIPLES OF NATURAL RESOURCE CONSERVATION IN AGRICULTURE

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
2.3.2.LO.1		
Use the knowledge acquired to manage and conserve game/wildlife.	**Critical thinking, collaborative, leadership** and **digital literacy skills** will be acquired as learners engage in brainstorming, group work and report presentation. **Communication, collaborative, critical thinking, digital literacy** and **leadership skills** will be acquired as learners surf the internet for information, work in groups and debate each other.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL:** Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different

		capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Evaluate various production scenarios and make decisions based on the information at hand. • Identify their own capabilities and qualities. • Provide positive support for learners having difficulties with self-regulation. • Manage their thoughts and behaviors. • Work together in groups or with partners. • understand the causes and effects of environmental degradation. **National Values:** • Tolerance, respect for all, appreciation, conservation, culture of maintenance will be fostered. • Honesty, resourcefulness, tolerance and respect for all will be acquired.
2.3.2.LO.2		
Use the knowledge and skills acquired in the management practices of mushroom production.	**Communication, collaborative, critical thinking, digital literacy** and **leadership skills** will be promoted as learners work in groups and surf the internet for information. **Communication, collaborative, leadership** and **manipulative skills** will be enhanced as learners work in groups and undertake the cultivation of mushrooms.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds.

		• Embrace diversity and practice inclusion. • Examine and dispel misconceptions/myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL:** Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Evaluate various production scenarios and make decisions based on the information at hand. • Identify their own capabilities and qualities. • Provide positive support for learners having difficulties with self-regulation. • Manage their thoughts and behaviors. • Work together in groups or with partners.

		National Values: • Honesty, resourcefulness, tolerance, respect for all will be acquired and re-enforced.
2.3.2.LO.3		
Use the knowledge acquired to explain the role of soil nutrients in soil fertility and productivity in crop production.	**Communication, collaborative** and **leadership skills** will be fostered as learners take part in brainstorming and practical group activities. **Digital literacy, communication, leadership, creative** and **manipulative skills** will be acquired as learners surf the internet for information and participate in group activities. **Manipulative, creative, communication, leadership** and **collaborative skills** will be enhanced as learners engage in group and project work.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL**: Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different capabilities, abilities and gender, at different levels of proficiency, the socio-emotional

		learning aspects of the pedagogy have empowered learners to: • Manage their thoughts and behaviors. • Evaluate various production scenarios and make decisions based on the information at hand. • Communicate effectively. • Work together in groups or with partners. • Explore how they learn and as they learn. **National Values:** • Honesty, resourcefulness, sustainability, tolerance, respect for all and self-control will be acquired and enhanced. • Excellence, leadership, integrity, responsibility and accountability will be promoted.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
2.3.2.CS.1	2.3.2.LI.1	2.3.2.AS.1
Demonstrate knowledge and understanding of game and wildlife conservation and their contribution to socio-economic development.	**Explain the meaning and importance of game and wildlife.** **Think-pair-share**: In pairs, learners brainstorm to come up with the meaning of game and wildlife. **Collaborative learning:** Learners in mixed-ability groups surf the internet for information on the importance of game reserve and wildlife. Learners present their report in a plenary session in class for assessment. Learners who are good at using the internet should support others. The teacher should also monitor learners as they use the internet.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
	2.3.2.LI.2	2.3.2.AS.2
	Discuss the need for conserving game and wildlife. **Inquiry-based learning:** In mixed-gender groups, learners surf the internet for information on the need to conserve game and wildlife. **Think-pair-share:** In pairs, learners discuss the usefulness of conserving game and wildlife. Teacher should support and monitor learners in surfing for information from the internet.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**
Teaching and Learning Materials	• Functional internet connectivity • Computer • Projector • Flip charts	• Textbooks on game reserve and wildlife • Smartphones • Notebooks • Pens

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
2.3.2.CS.2	2.3.2.LI.1	2.3.2.AS.1
Demonstrate knowledge, understanding and skills of mushroom production.	**Outline the economic importance and management practices in mushroom production.** **Inquiry-based learning:** In mixed-ability groups, learners surf the internet to come up with the economic importance and management practices in the cultivation of mushrooms. **Think-pair-share**: In pairs, learners discuss the economic importance and management practices in the cultivation of mushrooms. The teacher should intentionally involve all learners in the lesson discussion to dispel gender stereotyping in mushroom production.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning:
	2.3.2.LI.2	2.3.2.AS.2
	Demonstrate the skills in the cultivation of mushrooms. **Experiential learning:** Learners in mixed-ability groups undertake field trips to nearby mushroom farms or watch a documentary on various techniques involved in the production of mushrooms. **Problem-based learning**: In gender-based groups, learners use internet/watch video on the techniques of mushroom production, discuss and make a presentation on efficient ways of mushroom production. **Project based learning (Homework)**: In gender-based groups, learners cultivate mushrooms and write a report on the activities performed during cultivation. The teacher should encourage all learners to be involved in the cultivation of mushroom to dispel gender stereotyping in mushroom 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	• Functional internet connectivity • Computer • Projector • Flip charts	• Textbooks on game reserve and wildlife • Smartphones • Notebooks • Pens

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
2.3.2.CS.3	2.3.2.LI.1	2.3.2.AS.1
Demonstrate knowledge, understanding and skills of soil nutrients, fertility and productivity	**Explain the meaning of soil nutrients, fertility and productivity.** **Structuring talk for learning:** Learner's brainstorm to come up with the meaning of soil nutrients, fertility, and productive soils using relevant sources from the environment. **Experiential learning**: Learners in mixed-ability groups examine soil samples and discuss the characteristics of the soils in terms of color, texture, structure and composition. **Inquiry-based learning:** Learners in mixed-ability groups surf the internet for information on soil fertility and productivity, and discuss the conditions under which fertile soils may not be productive. Teachers should endeavour to involve learners who are introverts and learners with speech problems in the class discussions.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
	2.3.2.LI.2	2.3.2.AS.2
	Discuss the soil nutrients and their importance in crop production **Managing talk for learning:** Brainstorm learners in mixed-ability groups to come up with examples, sources and importance of soil nutrients. **Collaborative learning:** Learners in mixed-gender groups surf the internet for information on the classification and roles of soil nutrients. Learners in their groups discuss and make a presentation on their findings in class.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	Experiential learning: Learners in gender-based groups visit a farm/watch videos/pictures to observe plants showing nutrient deficiency symptoms and discuss their observations. Learners prepare a table showing the nutrients and their deficiency symptoms. Teachers should make sure all learners take part in the class discussions and presentations.		
	2.3.2.LI.3		2.3.2.AS.3
	Describe the types of fertilizers and their effects on crop production **Think-pair-share:** Learners in pairs brainstorm to come up with the meaning of fertilizer. **Initiating talk for learning:** Learners in mixed-ability groups watch a video or documentary on the types of fertilizers used in crop production and discuss their observations in class. **Collaborative learning**: Learners in mixed-ability groups discuss the merits, demerits and effects of using the various types of fertilizers. **Experiential learning**: Learners in gender-based groups demonstrate the various fertilizer application methods in the school farm under the guidance of a technician. **Project-based learning (Homework):** Learners in gender-based groups embark on a project to prepare compost for use on the school farm. Learners present a portfolio on the project for assessment.		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 soils • Measuring cylinder • Filter paper	• Litmus paper • Funnel • Beaker	• Functional internet connectivity • Video/pictures of plant nutrient deficiency symptoms

Subject AGRICULTURE
Strand 4 AGRICULTURE AND HEALTH
Sub-Strand 1 HEALTH ISSUES IN CROP PRODUCTION

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
2.4.1.LO.1		
Use the knowledge acquired to analyse the economic importance of pests and diseases in crop production and apply appropriate measures in the prevention and control of crop pests and diseases.	**Digital literacy, communication, collaborative** and **leadership skills** will be re-enforced as learners participate in group work, surf the internet for information and creation of photo albums **Digital literacy, communication, collaboration** and **leadership skills** will be enhanced as learners participate in group work, surf the internet for information and build portfolios. **Manipulative, communicative, leadership** and **collaborative skills** will be acquired as learners participate in the group discussions and undertake the practical exercises.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL:** Learners have been exposed to pedagogies that expounded socio-

		emotional issues while studying the Agriculture subject. Having studied together as learners with different capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Make the right choices in the management of pests and diseases. • Manage pests and diseases in an environmentally friendlier way. • Work together in groups or with partners. • Provide positive support for learners having difficulties with self-regulation. • Manage their thoughts and behaviors in all situations. **National Values:** • Leadership, dealing with setbacks and excellence will be acquired. • Honesty, tolerance, respect, resourcefulness and self-control will be acquired and re-enforced.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
2.4.1.CS.1	2.4.1.LI.1	2.4.1AS.1
Demonstrate knowledge, understanding and skills of the effects of common pests and diseases of crops and their causes, symptoms and prevention and control measures.	**Identify common crop pests and diseases and their effects in crop production** **Structuring talk for learning:** Learner's brainstorm to come up with the meaning of plant pests and diseases **Inquiry-based learning:** Learners in mixed-gender groups surf the internet for information on crop pests and diseases and make a presentation in class on the characteristics of healthy and diseased crops. **Collaborative learning:** Learners in mixed-ability groups discuss the effects of plant diseases and pest on Agriculture production. **Experiential learning (Homework):** Learners in mixed-ability groups visit a nearby crop production farm to observe and take pictures of healthy and diseased plants and plant pests or watch video pictures of healthy and pests and diseases and prepare a photo album. Teacher should ensure that all learners are involved in class discussions.	Level 1 Recall Level 2 Skills of conceptual understanding: **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
	2.4.1.LI.2	2.4.1AS.2
	Classify crop pests and diseases. **Managing talk for learning:** Learners in mixed-ability groups brainstorm to come up with the classification of crop diseases and pests. **Collaborative learning:** Learners in mixed-ability groups surf the internet to identify plant diseases and pest of Vegetables, Arable and Cash crops. Learners then discuss causative agents, symptoms and mode of transmission for the diseases and mode of feeding, stage of attacking the plant, damage caused, and the effects of damage caused for the pests. **Experiential learning (Homework)**: Learners in mixed ability groups build a picture portfolio on the pathogenic diseases and pest of Vegetables, Arable and Cash crops indicating their causative agents, symptoms, mode of transmission, mode of	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	feeding, stage of attacking the plant, damage caused and the effects of damage caused for the pests. Teacher should deliberately involve learners who are introverts and those with speech problems in class discussions, building of portfolio and presentation of results.	
	2.4.1.LI.3	2.4.1.AS.3
	Examine the preventive and control measures in controlling diseases in crop production under food safety measures. **Experiential learning:** Learners in mixed-ability groups embark on a field trip to a nearby crop farm to observe the control and preventive measures of plant diseases and pest or watch video/pictures on control and preventive measures of plant diseases and pest. **Collaborative learning:** Learners in mixed-ability groups discuss the control and preventive measures for crop diseases and pests applied in crops production and make a presentation in class. **Initiating talk for learning:** Learners discuss the merits and demerits of the various methods of prevention and controlling crop diseases and pests. **Experiential learning (Homework):** Learners in gender-based groups under the guidance of a technician/master craftsman undertake some of the control and preventive measures of crop diseases and pest in crop production on the field observing the necessary safety measures. Teacher should encourage all learners to participate in the hands-on practices of controlling pests and diseases in crop 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	• Functional internet connectivity • Pictures of symptoms of diseases and pest infestation on vegetables, arable, cash crops • Video/picture of control measures of crop diseases and pest • Knapsack sprayer • Agro chemicals for treating diseased and pest infested crops	

Subject AGRICULTURE
Strand 4 AGRICULTURE AND HEALTH
Sub-Strand 2 HEALTH ISSUES IN ANIMAL PRODUCTION

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
2.4.2.LO.1		
Use the knowledge acquired to analyse the economic importance of pests and diseases in animal/fish production and apply appropriate measures in the prevention and control of animal/fish pests and diseases.	**Digital literacy, communication, collaborative** and **leadership skills** will be enhanced as learners engage in group work and create photo albums. **Digital literacy, communication, collaboration** and **leadership skills** will be promoted as learners work in groups, surf the internet for information and build portfolios. **Manipulative, communication, leadership** and **collaborative skills** will be enhanced as learners participate in the group discussions and practical exercises. Teacher should deliberately involve learners who are introverts and those with speech problems in class discussions.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL:** Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different

		capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Work together in groups or with partners. • Make the right choices in the management of pests and diseases. • Manage pests and diseases in an environmentally friendlier way. • Provide positive support for learners having difficulties with self-regulation. **National Values:** • Honesty and resourcefulness as well as tolerance and respect for all will be acquired and re-enforced. • Discipline, tolerance, self-control and integrity will be acquired and enhanced.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
2.4.2.CS.1	2.4.2.LI.1	2.4.2.AS.1
Demonstrate knowledge, understanding and skills of the effects of common pests and diseases of animals/fish and their causes, symptoms and prevention and control measures.	**Identify common diseases, pests and parasites of animals/fish and their effects in animal/fish production** **Structuring talk for learning:** Learners in mixed-ability groups brainstorm to come up with the meaning of animal diseases, pests and parasites. **Experiential learning:** Learners in mixed-ability groups visit a nearby animal/fish production farm to observe and take pictures of healthy and ill health animals/fish or watch a video/picture of healthy and ill animals and prepare a photo album. **Collaborative learning:** Learners in mixed-ability groups discuss the nature and effects of animal diseases on Animal production. Teacher should deliberately involve learners who are introverts and those with speech problems in class discussions, building of photo album and presentation of results	Level 1 Recall **Level 2 Skills of conceptual understanding** Level 3 Strategic reasoning Level 4 Extended critical thinking and reasoning
	2.4.2.LI.2	2.4.2.AS.2
	Describe the classification, causes and symptoms of animal/fish diseases in animal production **Inquiry-based learning:** Learners in mixed-gender groups surf the internet for information on animal and fish diseases, pests and parasites**,** and discuss their findings in class. **Collaborative learning:** Learners in mixed-gender groups classify animal/fish diseases, causes and symptoms as well as discuss the factors that predispose farm animals to diseases and pest infestation. **Structuring talk for learning:** Learners in mixed-ability groups discuss the characteristics of healthy and ill animals/fishes.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	Experiential learning (Homework): Learners in mixed-ability groups build a picture album on the diseases, pest and parasites of ruminants, monogastrics and fish indicating their nature, causative agents, symptoms and mode of transmission. All learners should actively be involved in all activities. Teacher should monitor learners when they are using the internet. The teacher should use leading questions to support some learners in the classification, causes and symptoms of animal/fish diseases, pests and parasites.	
	2.4.2.LI.3	2.4.2.AS.3
	Examine the preventive and control measures in controlling diseases and pest in animals/fishes in animal production under food safety measures **Experiential learning:** Learners in mixed ability groups embark on a field trip to a nearby animal/fish farm to observe the control and preventive measures of animal/fish diseases pest and parasites or watch a documentary on control and preventive measures of animal/fish diseases, pests and parasites. **Collaborative learning:** Learners in mixed-ability groups discuss the control and preventive measures applied in animal/fish production and make a presentation at a plenary section in class. **Initiating talk for learning:** Learners discuss the merits and demerits of the various methods of prevention and control of animal/fish diseases. **Experiential Learning (Homework):** Learners in gender-based groups under the guidance of a technician/master craftsman undertake some of the control and preventive measures of animal/fish diseases, pest and parasites in animal production on the field observing all the necessary safety measures. Teacher should deliberately choose an animal farm that dispel gender stereotyping. Teacher should encourage all learners to take part in the hands-on practicals of controlling diseases and pest in animal 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	• Videos and pictures of sick and healthy animals, cameras/cam videos • Functional internet connectivity	

	• Pictures of sick and healthy animals

Subject AGRICULTURAL SCIENCE
Strand 5 AGRICULTURAL ECONOMICS, AGRIBUSINESS AND COMMUNICATION
Sub-Strand 1 ECONOMICS FOR AGRICULTURE

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
2.5.1.LO.1		
Apply the knowledge and skills acquired to everyday life, agricultural production activities and business transactions.	**Critical thinking, communication, collaborative** and **digital literacy skills** will be enhanced as learners brainstorm, watch videos, engage in discussion, group work and report writing. **Creativity, leadership skills, teamwork, digital literacy, communication** and **critical thinking skills** will be inculcated as learners surf the internet for information, work in group, build portfolios, draw graphs and write reports.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL**: Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different

		capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Identify the effects of their behavior on others and refrain from negative practices. • Set goals and work to achieve them. • Provide positive support for learners having difficulties with self-regulation. • Be aware of real-world challenges. • Relate classroom activities to their personal goals. **National Values:** • Honesty, resourcefulness and self-control to surf for information from the internet as well as tolerance and respect for all in group work will be acquired. • Tolerance, diligence, excellence and discipline will be re-enforced.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
2.5.1.CS.1	2.5.1.LI.1	2.5.1.AS.1
Demonstrate knowledge, understanding and skills of the concept and principles of demand and supply.	**Explain the meaning and principles of demand and supply.** **Managing talk for learning:** Learners in mixed-ability groups surf the internet for information on demand and supply and discuss their findings in class. **Think-pair-share:** In pairs, learners discuss the meaning and principles of demand and supply. **Individual learning:** Individual learners watch videos/charts on how demand and supply affect pricing of agricultural produce and write a report on their findings. Teachers should ensure that the videos/pictures used do not enforce stereotyping and if they do, teachers should discuss with learners.	**Level 1 Recall** **Level 2 Skills of conceptual understanding** Level 3 Strategic reasoning Level 4 Extended critical thinking and reasoning
	2.5.1.LI.2	2.5.1.AS.2
	Discuss the factors that influence demand and supply of Agricultural commodity. • **Inquiry-based learning:** Learners in a mixed-gender group surf the internet for information on the factors that affect demand and supply. • **Think-pair-share:** Learners in pairs discuss the factors that affect demand and supply and build a portfolio using the factors identified. • **Project-based learning:** Learners in mixed-ability groups watch a video on the effects of shifts in the demand and supply curves in a mixed gender group, discuss and write a report on it. Teachers should ensure that the videos/pictures used should not enforce stereotyping and if they do, teachers should discuss it with learners. Teachers should ensure that all learners are involve in the class discussions, the building of portfolios and report presentation.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	2.5.1.LI.3		2.5.1.AS.3
	Create demand and supply schedules and prepare graphs to show the determinants of price for an agricultural commodities • **Inquiry-based learning:** Learners in a mixed-gender groups watch a video on the determinants of price for an agricultural commodity and prepare a graph on the demand and supply schedules. In the same groups learners mimic a demand and supply scenario. • **Project based learning**: In mixed- ability groups, learners design a questionnaire with a maximum of eight questions on supply and demand schedules and determinants of prices. Learners administer the question at the school market and present their report.		Level 1 Recall Level 2 Skills of conceptual understanding Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**
Teaching and Learning Materials	• Functional internet connectivity • Computer • Video on the concept of demand and supply • Notebooks	• Pens • Textbooks on Agricultural economics • Video/charts on the factors influencing demand and supply • Chart to build portfolio, pictures/charts on determinants of price for agricultural commodities	

Subject AGRICULTURE
Strand 5 AGRICULTURAL ECONOMICS, AGRIBUSINESS AND COMMUNICATION
Sub-Strand 2 COMMUNICATIONS IN AGRICULTURE

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
2.5.2.LO.1		
Use the knowledge and skills acquired to efficiently communicate in Agriculture and related issues.	**Collaborative, creativity, leadership skills, digital literacy, communication** and **critical thinking skills** will be inculcated as learners surf the internet for information, work in groups and write reports.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL**: Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different

		capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Identify their own capabilities and qualities. • Provide positive support for learners having difficulties with self-regulation. • Listen to their peers' opinions and express disagreements in constructive ways. • Resolve interpersonal conflicts with each other. • Relate classroom activities to their personal goals. **National Values:** Honesty, resourcefulness and self-control as well as tolerance and respect for all will be acquired re-enforced.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
2.5.2.CS.1	2.5.2.LI.1	2.5.2.AS.1
Demonstrate knowledge, understanding and skills of human interaction that exist in Agricultural enterprises	**Create a pie chart showing the sectors of Agricultural production and enterprises and the extent of human interaction.** **Inquiry-Based Learning:** In a mixed-gender groups, learners surf the internet for information on the sectors of Agricultural production and enterprises and the extent of human interaction. **Think-pair-share:** Learners in pairs discuss the sectors of Agricultural production and enterprises and the degree of human interaction. Teacher should involve all learners in class discussions and presentation of reports.	Level 1 Recall Level 2 Skills of conceptual understanding Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**
	2.5.2.LI.2	2.5.2.AS.2
	Discuss the various modes of communication in Agriculture. **Think-pair-share:** In pairs, learners surf the internet for information on the modes of communication in Agriculture and present their findings in class. **Project based learning:** In a mixed- gender groups, learners watch a short documentary on the various modes of communication in Agriculture. They then practice the various modes of communication among other groups in class. Videos/pictures used should not enforce stereotyping and if they do, teachers should discuss them with learners.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
Teaching and Learning Materials	• Functional internet connectivity • Computer • Video on Agricultural production/enterprises and how they interact with humans • Notebook • Pens • Textbooks on Agriculture communication • Video/pictures on the various modes of communication	

Subject AGRICULTURE
Strand 5 AGRICULTURAL ECONOMICS, AGRIBUSINESS AND COMMUNICATION
Sub-Strand 3 AGRIBUSINESS MANGEMENT

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
2.5.3.LO.1		
Use the knowledge and skills acquired to successfully manage an agribusiness	**Collaborative, creativity, leadership, digital literacy, communication** and **critical thinking skills** will be re-enforced as learners surf the internet for information, work in groups and present reports. **Collaborative, creativity, leadership, digital literacy** and **communication skills** will be enhanced as learners engage in practical activities, build portfolio, watch video/pictures, group work, and arrangement of resources. **Teamwork, creative, leadership** and **communication skills** will be developed as learners practice the keeping of farm records, working in groups and designing farm records.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL**: Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different

		capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Set personal goals and work to achieve them. • Identify their own capabilities and qualities. • Provide positive support for learners to manage business successfully. • Be aware of real-world challenges. • Relate classroom activities to their personal goals. • Develop their own strategies on how to complete a task or learn a new task. **National Values:** • Honesty, resourcefulness, self-control, resilience, hard work, tolerance, accountability, transparency, integrity and respect for all will be inculcated.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
2.5.3.CS.1	2.5.3.LI.1	2.5.3.AS.1
Demonstrate knowledge, understanding and principles of establishing, financing and record keeping in agribusiness	**Discuss the procedure for the establishment of Agricultural enterprises** • **Initiating talk for learning:** Brainstorm in pairs to come up with the procedures for establishing an Agricultural enterprise. • **Inquiry-based learning**: In mixed-ability groups, learners inquire about Agricultural enterprises in their community and how they were established or watch a video in the procedures for establishing an agricultural enterprise. Learners then make a presentation on the procedures involved in and the factors affecting the establishment of a chosen Agricultural enterprise. Teachers should ensure that videos do not enforce stereotyping and if they do, teachers should discuss them with learners.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
	2.5.3.LI.2	2.5.3.AS.2
	Discuss the sources of finance for Agricultural enterprises. **Collaborative learning:** In gender-based groups, learners brainstorm to come up with the sources of finance for Agricultural enterprises. They then build a portfolio using the sources identified. **Problem-based learning**: In pairs, learners surf the internet for information on the sources of finance for males and females in an Agriculture enterprise. Learners discuss the degree of difficulty for women and persons with disabilities to secure finance for their agricultural enterprises.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**
	2.5.3.LI.3	2.5.3.AS.3

	Analyse the types of records keeping in Agricultural enterprises **Think-pair-share:** Learners in pairs brainstorm to come up with the meaning, types and importance of farm records. **Experiential based learning:** Learners in pairs design a typical record keeping for a particular agricultural business operation. Learners discuss the various ways that illiterates can keep records on their activities in Agricultural enterprises.		Level 1 Recall Level 2 Skills of conceptual understanding Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**
	2.5.3.LI.4		2.5.3.AS.4
	Discuss the managerial characteristics required for the management of agribusiness. **Inquiry-based learning:** Learners in mixed-ability groups surf the internet for managerial characteristics required for the management of agribusiness. **Think-pair-share:** Learners in pairs discuss the characteristics of a good manager. **Project-based learning:** Learners in mixed-gender groups role play the characteristics of a good manager. Teacher should consciously involve all learners in the role play to diffuse gender stereotyping about managerial positions.		Level 1 Recall **Level 2 Skills of conceptual understanding** Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning:**
Teaching and Learning Materials	• Functional internet connectivity • Computer • Video on the establishment of Agribusiness	• Notebook • Pens • Textbooks on Agribusiness	• Textbooks on Agricultural enterprise • Pictures of various farm records • Resource person

YEAR THREE

Subject AGRICULTURE
Strand 1 CONCEPT OF AGRICULTURE IN AN INDUSTRIALIZING SOCIETY
Sub-Strand 1 AGRICULTURE AND SOCIETY

Learning Outcomes	21st Century Skills and Competencies	GESI[5], SEL[6] and Shared National Values
3.1.1.LO.1		
Use the knowledge acquired to promote good Agricultural practices and sustainable Agriculture	**Digital literacy, communication, critical thinking, teamwork, leadership** and **creative skills** will be enhanced as learners surf the internet for information, take part in group activities, undertake project work and make presentations in class.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL**: Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Evaluate various production practices/methods to take environmentally friendly decisions. • Identify their own capabilities and qualities. • Manage their thoughts and behaviors. • Become good team players.

		• Understand the need to use resources sustainably. **National Values:** • Honesty, resourcefulness and self-control to surf for information from the internet as well as tolerance and respect for all will be promoted as learners work in groups. • Responsibility, appreciation, patriotism, maintenance culture, diligence, positive attitude and conservation will be promoted and inculcated. • Environmental cleanliness will be acquired and enhanced during management of Agricultural wastes. • Resourcefulness, responsibility and maintenance culture will also be enhanced.

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 knowledge, understanding and skills of the principles of good Agricultural practices and sustainable Agriculture in an industrializing society.	**Explain the meaning, practices and factors influencing sustainable Agriculture and relate it to good Agricultural practices** **Initiating talk for learning:** Learners in mixed-ability groups surf the internet and brainstorm to come up with the meaning of Good Agricultural Practices (GAP) and sustainable Agriculture. **Structuring talk for learning:** Learners in mixed-ability groups discuss the practices of GAP and sustainable Agriculture. **Think-pair-share:** Learners in pairs discuss the factors that influence GAP and sustainable Agriculture in the society. **Project-based learning (Homework):** Learners in mixed-gender groups undertake research on cultivation of maize/cowpea, using GAP and present their report in a plenary section in class.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
	3.1.1.LI.2	3.1.1.AS.2
	Apply good Agricultural practices to promote sustainable Agriculture **Structuring talk for learning:** Learners in mixed-gender groups brainstorm to come up with the list of modern technologies used in sustainable Agriculture after surfing for such information on the internet and other sources. **Think-pair-share:** Learners in pairs discuss the various technologies of sustainable Agriculture. **Project-based learning:** Learners in mixed-gender groups research on the sustainable Agricultural technologies available in Ghana and make a presentation on it in class.	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

	Employ sustainable techniques (including feasible technology) to manage Agricultural wastes. **Initiating talk for learning:** Learners in mixed ability groups brainstorm to come up with the sources of Agricultural wastes. **Collaborative learning:** Learners in mixed-ability groups discuss sustainable techniques for managing Agricultural wastes and make their presentation in class. **Experiential learning:** Learners in mixed-ability groups prepare compost from Agricultural wastes.	Level 1 Recall Level 2 Skills of conceptual understanding Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**
Teaching and Learning Materials	• Functional internet connectivity • Computer • Video/pictures on good Agricultural practices and sustainable Agriculture • Farm implements and inputs	• Pens • Notebooks • Textbooks and journals on Sustainable Agriculture and GAP. • Video/pictures on sustainable techniques to manage Agricultural wastes

Subject AGRICULTURE
Strand 2 MODERN TECHNICAL AND MECHANISED AGRICUTURE
Sub-Strand 1 MODERN MECHANISED AGRICULTURE

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
3.2.2.LO.1		
Use the knowledge, understanding and skills acquired to explain the meaning, importance, application and challenges of emerging technologies in Agriculture.	**Digital literacy, communication, critical thinking, leadership, collaborative, manipulative, creative skills and global citizenship** will be promoted as learners surf the internet for information on the emerging technologies in Agriculture.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL:** Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different

		capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Evaluate various technologies so as to make informed decisions. • Manage their thoughts and behaviors. • Become good team players. • Appreciate and accept new technologies. **National Values:** Fairness, respect, responsibility, resourcefulness, self-control, tolerance and acceptability will be enhanced.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
3.2.2.CS.1	3.2.2.LI.1	3.2.2.AS.1
Demonstrate the knowledge, understanding and skills of the meaning, importance, application and challenges of emerging technologies in Agriculture	**Explain the meaning, importance and challenges of emerging technologies in Agriculture.** **Think-pair-share:** Learners in pairs brainstorm or surf the internet to come up with the meaning of emerging technologies in Agriculture. **Initiating talk for learning:** Learners in gender-based groups discuss the emerging technologies used in Agriculture and present their reports in a plenary section in the class. **Experiential learning:** learners visit a farm where some of the emerging technologies in Agriculture are being used or watch a video on the use of some emerging technologies in Agriculture in crop and animal production. Learners then discuss the importance of the emerging technologies in Agriculture. **Project-based learning:** In gender-based groups, learners conduct research (using internet and other sources) on the social, economic and environmental impacts and problems associated with the adoption of the emerging technologies in Agriculture.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
	3.2.2.LI.2	3.2.2.AS.2
	Explain applications and prospects of emerging technologies in Agriculture **Experiential learning:** Learners in mixed-gender/mixed-ability groups visit the school or nearby farm to practice the use of some emerging technologies such as disease and pest detection App, GPS etc with the assistance of the teacher, technician or farmer and write a report on the activity. **Structuring talk for learning:** In the same groups on the farm, learners discuss the prospects of the emerging technologies in enhancing agricultural productivity.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

Teaching and Learning Materials	• Functional internet connectivity • Computer • Projector • Pens	• Notebooks • Drones • GIS • Video/pictures of application of some emerging technologies in Agriculture	• Tablets or phones with disease and pest detecting Apps, • Textbooks and journals on emerging technologies in Agriculture • GPS • Textbooks and journals on emerging technologies in Agriculture

Subject AGRICULTURE
Strand 3 FOOD PRODUCTION AND NATURAL RESOURCE CONSERVATION
Sub-Strand 1 PRINCIPLES OF FOOD PRODUCTION AND POST HARVEST TECHNOLOGY

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
3.3.1.LO.1		
Use the knowledge acquired to process, store and market high quality food products under hygienic conditions.	**Manipulative, digital literacy, collaborative, creative, critical thinking, leadership** and **communication skills** will be promoted during group work, internet surfing and drawing of flow chart. **Digital literacy, collaborative, critical thinking, leadership** and **communication skills** will be acquired as learners engage in group work and surf for information online.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL**: Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different

		capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Evaluate various storage methods to make an informed decision. • Identify their own capabilities and qualities. • Manage their thoughts and skills in storage. • Become good marketers. • Appreciate and operate under hygienic conditions. **National Values:** • Hard work, creativity, innovation, honesty, integrity, resourcefulness and confidence to process, market and surf for information from the internet as well as tolerance and respect for all in group work will be acquired. • All learners will develop/improve upon the national value of integrity, honesty and fairness during the marketing of produce/products and safety and quality aspects of processing and storage.
3.3.1.LO.2		
Use the knowledge acquired to process, market and store animal/fish products.	**Digital literacy, collaborative, creative, critical thinking** and **leadership, communication skills** will be acquired as learners engage in group work, surf the internet for information and draw flow charts.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to:

		• Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL**: Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Evaluate various storage methods to make an informed decision. • Identify their own capabilities and qualities. • Manage their thoughts and skills in storage. • Become good marketers. • Appreciate and operate under hygienic conditions.

		National Values: Cleanliness, responsibility, honesty, integrity, hard work, self-control and resourcefulness will be acquired/enhanced during the handling, processing and marketing of the animal products.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
3.3.1.CS.1	3.3.1.LI.1	3.3.1.AS.1
Demonstrate the knowledge, understanding and skills of processing, storage and marketing of safe and quality food products from selected food crops.	**Describe the procedure of processing, marketing and storing of selected food crops.** **Think-pair-share:** Learners in pairs brainstorm the meaning of processing, storage and marketing of selected crops. **Inquiry-based learning:** Learners in mixed-ability groups watch a documentary on how harvested crops are processed for usage, storage and marketing. **Problem-based learning:** In the same groups, learners prepare a flow chart on the procedures for processing, storage and marketing of selected crops based on the documentary watched. **Initiating talk for learning:** Learners in mixed-ability group discuss the methods involved in the processing, storage and marketing of selected crops and present their findings in class. **Project-based learning (Homework):** In mixed-ability groups, learners process selected crops into secondary products such as orange to orange juice, tomatoes to tomatoes paste, pepper to dry pepper, soya to soya milk, ornamentals to flowers etc. and present a report on their project.	Level 1 Recall Level 2 Skills of conceptual understanding Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**
	3.3.1.LI.2	3.3.1.AS.2
	Apply food safety and quality practices in the processing, storage and marketing of selected food crops. **Building on what others say:** In pairs, learners brainstorm the meaning of safety and quality practices in crop production.	Level 1 Recall Level 2 Skills of conceptual understanding Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**

	Problem-based learning: In mixed-ability groups, learners surf the internet for the steps involved in producing safe and quality crop products for human and animal consumption. **Think-pair-share:** Learners in pairs discuss the importance of applying safety and quality practices to processing, storage and marketing of selected crop products. **Project-based learnin**g: In gender-based groups, learners build a pictorial flow chart of the steps and importance of safety and quality in processing, storage and marketing of selected crop products.		
Teaching and Learning Materials	• Functional internet connectivity • Industries and managers • Community members • Realia: Manual and mechanical graters, fermentation sacs and bowls, specimens of raw materials for processing • Textbooks and journals on postharvest technologies • Computer	• Projector • Pens • Notebooks • Textbook and journals on Agricultural food safety • Flow charts	

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
3.3.1.CS.2	3.3.1.LI.1	3.3.1.AS.1
Demonstrate the knowledge, understanding and skills of processing, storage and marketing of safe and quality products from selected animals, including fish.	**Describe the procedure for processing, marketing and storage of produce and products from selected animals/fish** **Think-pair-share:** Learners in pairs revise the meaning of processing, storage and marketing of animal products. **Problem-based learning:** Learners in mixed-ability groups watch a documentary or research (using internet or other sources) on how animals are processed for use, stored and marketed. Learners then present a report on the documentary watched or research conducted in class. **Initiating talk for learning:** Learners in mixed-ability group, discuss the methods involved in the processing, storage and marketing of animal products. **Project-based learning:** In mixed-ability groups, learners process selected animals/animal produce into secondary products such as meat to mincemeat, egg to omelette etc. with the aid of a resource person and present a portfolio on their project.	Level 1 Recall Level 2 Skills of conceptual understanding Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**
	3.3.1.LI.2	3.3.1.AS.2
	Describe the procedure for processing, marketing and storage of produce and products from selected fish. **Think-pair-share:** Learners in pairs revise the meaning of processing, storage and marketing of fish products. **Problem-based learning:** Learners in mixed-ability groups watch a documentary or research (using internet or other sources) on how fish is processed for use, stored and marketed. Learners then present a report on the documentary watched or research conducted in class.	

	Initiating talk for learning: Learners in mixed-ability group, discuss the methods involved in the processing, storage and marketing of fish products. **Project-based learning:** In mixed-ability groups, learners process selected fish into secondary products such as salting, curing, grilling, smoking, drying etc. with the aid of a resource person and present a portfolio on their project.	
	3.3.1.LI.3	3.3.1.AS.3
	Apply food safety and quality measures in the processing, marketing and storage of selected animals and their carcasses. **Building on what others say:** In pairs, learners brainstorm the meaning of safety and quality practices in animal production. **Problem-based learning:** In mixed-ability groups, learners surf the internet for the steps involved in producing safe and quality animal products for human consumption. **Think-pair-share:** Learners in pairs discuss the importance of applying safety and quality practices to processing, storage and marketing of selected animal products. **Project-based learning:** In gender-based groups, learners build a pictorial flow chart of the steps and importance of safety and quality in processing, storage and marketing of selected animal products.	Level 1 Recall Level 2 Skills of conceptual understanding Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**
	3.3.1.LI.4	3.3.1.AS.4
	Apply food safety and quality measures in the processing, marketing and storage of selected fish and their carcasses. **Building on what others say:** In pairs, learners brainstorm the meaning of safety and quality practices in fish production.	

	Problem-based learning: In mixed-ability groups, learners surf the internet for the steps involved in producing safe and quality fish products for human consumption. **Think-pair-share:** Learners in pairs discuss the importance of applying safety and quality practices to processing, storage and marketing of selected fish products. **Project-based learning:** In gender-based groups, learners build a pictorial flow chart of the steps and importance of safety and quality in processing, storage and marketing of selected fish products		
Teaching and Learning Materials	• Functional internet connectivity • Computer • Projector • Pens • Notebooks	• Flow charts • Textbook and journals on Agricultural food safety and meat science. • Industries and managers • Community members • Salt	• Industrial chemical preservatives • Samples of fish and carcasses to process • Manual and motorized mincers • Deep freezers • Textbooks and journals on animal and meat science

Subject AGRICULTURE
Strand 3 CONCEPTS OF AGRICULTURE IN AN INDUSTRIALIZING SOCIETY
Sub-Strand 2 PRINCIPLES OF NATURAL RESOURCE CONSERVATION IN AGRICULTURE

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
3.3.2.LO.1		
Use the knowledge acquired to conserve soil and water for Agricultural production	**Communication, digital literacy, critical thinking, leadership, creative** and **collaborative skills** will be enhanced from surfing for information on the internet and participation in group work and reports. **Communication, collaborative, leadership, digital literacy,** and **critical thinking skills** are acquired and enhanced from the group work, surfing for information on the internet and presentation in plenary sessions.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL:** Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to:

		• Evaluate various conservation practices to make informed decisions. • Identify their own capabilities and qualities. • Provide positive support for learners having difficulties with self-regulation. • Manage their thoughts and behaviors. • Collaborate with each other. • Understand the causes and effects of environmental degradation. **National Values:** Responsibility, appreciation, patriotism, maintenance culture, diligence, positive attitude and conservation will be promoted.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
3.3.2.CS.1	3.3.2.LI.1	3.3.2.AS.1
Demonstrate knowledge, understanding and skills of soil and water conservation.	**Explain the meaning, importance and principles of soil and water conservation.** **Initiating talk for learning:** All learners surf the internet and brainstorm to come up with the meaning of soil and water conservation. **Structuring talk for learning:** Learners in gender-based groups research on the principles of soil and water conservation and present their findings in a plenary session in class. **Collaborative learning:** Learners in mixed-ability groups discuss the importance of soil and water conservation in Agricultural production.	**Level 1 Recall** **Level 2 Skills of conceptual understanding** Level 3 Strategic reasoning Level 4 Extended critical thinking and reasoning
	3.3.2.LI.2	3.3.2.AS.2
	Describe the types of soil water and their importance in Agricultural production. **Think-pair-share:** Learners in pairs brainstorm to come up with the types of soil water. **Collaborative learning:** Learners in mixed-gender groups discuss the importance of soil water in Agricultural production, and make a presentation in class at a plenary session.	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
	3.3.2.LI.3	3.3.2.AS.3
	Describe the types of soil erosion and their effects on Agricultural production. **Inquiry-based learning:** Learners in mixed-ability groups surf the internet for the meaning, agents, types and effects of soil erosion in Agricultural production, and discuss their finding in class. **Experiential learning:** Learners in mixed-gender groups observe their school compound or watch a documentary for the types and effects of soil erosion, discuss	Level 1 Recall **Level 2 Skills of conceptual understanding** **Level 3 Strategic reasoning** **Level 4 Extended critical thinking and reasoning**

	the ways of reducing the impact of soil erosion in Agricultural production and write a short report on their observations. **Collaborative learning:** Learners in mixed-ability groups discuss the economic importance of soil erosion in Agricultural production. Learners make a presentation to the class. **Project-based learning (Homework):** Learners in mixed-gender groups undertake a project in controlling erosion on the school farm/compound/community and present a portfolio on the project.		
Teaching and Learning Materials	• Functional internet connectivity • Soil samples • Water samples • Textbooks and journals on soils and water conservation	• Computer • Projector • Notebook	• Pens • Textbooks and journals on soils • Realia: Vetiver grass, elephant grass

Subject AGRICULTURE
Strand 4 AGRICULTURE AND HEALTH
Sub-Strand 1 HEALTH ISSUES IN CROP PRODUCTION

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
3.4.1.LO.1		
Employ the knowledge of the importance of classification and dispersal of weeds to select appropriate method of control in Agricultural production.	**Digital literacy, communication, critical thinking, manipulative, leadership and collaborative skills** will be acquired and enhanced as learners to take part in group activities, undertake the project work and present reports.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases. about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL:** Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different

		capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Evaluate a range of strategies to help them make informed decisions for the management of weeds. • Identify their own capabilities and skills. • Manage their thoughts and behaviors. • Work together in groups or with partners. **National Values:** Responsibility, appreciation, patriotism, maintenance culture and conservation will be promoted.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
3.4.1.CS.1	3.4.1.LI.1	3.4.1.AS.1
Demonstrate knowledge, understanding and skills of the meaning, importance, classification, dispersal and control of weeds in Agricultural production.	**Explain the meaning and classification of weeds and their economic importance in Agricultural production.** **Initiating talk for learning:** Learners brainstorm to come up with the meaning of weeds in Agricultural production. **Collaborative learning:** Learners in mixed-ability groups surf the internet for information on the characteristics and economic importance of weeds. In the same group, learners discuss the characteristics of weeds and their economic importance in Agricultural production. **Experiential learning:** Learners in mixed-gender groups embark on nature's walk in their school compound guided by a facilitator to identify and collect the common weeds on their school compound. Learners then surf the internet to determine the botanical names of the weeds collected. **Project-based learning:** In the same groups, learners build a weed album of the common weeds collected from the school compound, indicating their common names, botanical names and their economic importance.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
	3.4.1.LI.2	3.4.1.AS.2
	Describe the methods of weed dispersal **Think-pair-share:** Learners in pairs brainstorm to come up with the meaning of weed dispersal using pictures and relevant resources. **Collaborative learning:** Learners in mixed-ability groups surf the internet for information on the agents and methods of weed dispersal, and discuss their findings in class.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	Structuring talk for learning: Learners in mixed-gender groups discuss the characteristics of weeds that influence their dispersal by the various agents, and present a report at a plenary session in class. **Managing talk for learning:** Learners in mixed-gender groups discuss the advantages and disadvantages of weed dispersal in Agriculture.	
	3.4.1.LI.3	3.4.1.AS.3
	Discuss the methods of weed control in Agricultural production. **Inquiry-based learning:** Learners in mixed-ability/mixed-gender groups surf the internet for information on weed control. **Managing talk for learning:** Learners in mixed-ability groups discuss the methods of controlling weeds in farms and indicate their advantages and disadvantages. **Think-pair-share:** Learners in pairs discuss the materials, tools and equipment used in controlling weeds in farms. **Experiential learning (An arranged lesson):** Learners in gender-based groups apply various weed control methods on the school farm under the guidance of a technician, observing all the safety protocols.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
Teaching and Learning Materials	• Realia (examples of weeds in the community) • Weed album, functional internet connectivity • Video/pictures of various species of weeds in Agricultural fields, • Video/pictures of weeds dispersed by the various agents of dispersal • Weed science textbooks • Cutlass	• Hoe • Knapsack sprayer/hand sprayer • Weedicide/herbicide • Rotary hoes • Textbooks and journals on weeds

Subject AGRICULTURE
Strand 5 AGRICULTURAL ECONOMICS, AGRIBUSINESS AND COMMUNICATION
Sub-Strand 1 ECONOMICS FOR AGRICULTURE

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
3.5.1.LO.1		
Use the knowledge acquired on the factors of production, functional production and diminishing marginal returns to understand the operation of Agricultural enterprises.	**Creative, leadership, teamwork, digital literacy, communication** and **critical thinking skills** will be enhanced during surfing for information on the internet, group work and presentations. **Communication, teamwork, leadership, creative, collaborative, critical thinking** and **digital literacy skills** will be acquired/enhanced by learners from brainstorming, surfing for information on the internet, watching videos, group work and writing of report.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL:** Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different

		capabilities, abilities and gender, at different levels of proficiency, the socio-emotional learning aspects of the pedagogy have empowered learners to: • Identify their own capabilities and qualities. • Set goals and work to achieve them. • Provide positive support for learners to manage business successfully. • Be aware of real-world challenges. • Develop their own strategies on how to complete a task or learn a new task. **National Values:** • Accountability, transparency, probity, integrity and diligence will be promoted. • Self-confidence, trust, and honesty will be encouraged.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
3.5.1.CS.1	3.5.1.LI.1	3.5.1.AS.1
Demonstrate knowledge, understanding and skills of the factors of production, functional production and diminishing marginal returns.	**Discuss the meaning and importance of the factors of production, functional production and marginal diminishing returns.** **Inquiry-based learning**: Learners in mixed-ability groups surf the internet for information on the meaning and importance of factors of functional production and marginal diminishing returns in Agricultural production. **Structuring talk for learning:** Learners in mixed-ability groups research into how the factors of functional production and marginal diminishing returns affect crops and animal production and present their findings in a plenary session.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
	3.5.1.LI.2	3.5.1.AS.2
	Apply the concepts of functional production and diminishing marginal returns in Agricultural production. **Inquiry-based learning:** In mixed-ability groups, learners surf the internet for information on the application and characteristics of functional production and diminishing marginal returns. **Initiating talk for learning:** In the same groups, discuss the application of functional production and diminishing marginal returns in Agricultural production. **Structuring talk for learning:** Learners in mixed-gender/ability groups discuss the characteristics of graphs of diminishing returns and relate them to factors of production. **Collaborative learning:** Learners in mixed-ability groups watch a documentary on functional production and diminishing marginal returns in Agricultural production and write a report on their findings.	Level 1 Recall **Level 2 Skills of conceptual understanding** Level 3 Strategic reasoning **Level 4 Extended critical thinking and reasoning**
	3.5.1.LI.3	3.5.1.AS.2

	Draw production curves showing the relationship between fixed inputs and variable inputs for given resources in Agricultural production. **Inquiry-based learning:** In mixed-ability groups, learners brainstorm to come up with the meaning of fixed input and variable input in Agricultural production. **Initiating talk learning:** In the same groups, learners discuss the relationship between fixed input and variable input in Agricultural production. **Experiential learning (Homework):** In mixed-gender groups, learners visit a farm to catalogue items and equipment with fixed and variable costs and then present a report on their findings.		Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning
Teaching and Learning Materials	• Functional internet connectivity • Video/pictures on factors of Agricultural production • Notebook • Pens	• Textbooks and journals on Agricultural economics • Chart to build portfolio • Computer • Nearby or accessible farm	• Video/pictures on fixed and variable inputs • Fertilizers • Seeds • Fuel

Subject AGRICULTURE
Strand 5 AGRICULTURAL ECONOMICS, AGRIBUSINESS AND COMMUNICATION
Sub-Strand 3 AGRIBUSINESS MANAGEMENT

Learning Outcomes	21st Century Skills and Competencies	GESI, SEL and Shared National Values
3.5.3.LO.1		
Use the knowledge and skills acquired to successfully process and market Agricultural produce.	**Collaborative, leadership, digital literacy, communication, creative** and **critical thinking skills** will be acquired/enhanced as learners watch video, engage in group work, conduct surveys and make presentations on their report/findings.	**GESI:** Learners having experienced a teaching method that ensures Gender Equality and Social Inclusion and working with each other in an inclusive way, cross-sharing of knowledge and understanding among groups and individuals will lead them to: • Respect individuals of different backgrounds. • Embrace diversity and practice inclusion. • Examine and dispel misconceptions/ myths about gender and disabilities as they relate to Agriculture. • Interrogate their stereotypes and biases about gender division of labour in Agriculture. • Identify injustice in society, especially in the agricultural sector and advocate for change. • Embrace gender equity and equality. **SEL:** Learners have been exposed to pedagogies that expounded socio-emotional issues while studying the Agriculture subject. Having studied together as learners with different capabilities, abilities and gender, at different levels of proficiency, the socio-

		emotional learning aspects of the pedagogy have empowered learners to: • Set goals and work to achieve them. • Identify their own capabilities and qualities. • Provide positive support for learners to manage business successfully. • Be aware of real-world challenges. • Develop their own strategies on how to complete a task or learn a new task. **National Values:** Self-reliance, trust, honesty, accountability, transparency, probity, integrity and diligence will be fostered.

Content Standards	Learning Indicators and Pedagogical Exemplars with 21st Century and GESI	Assessment
3.5.3.CS.1	3.5.3.LI.1	3.5.3.AS.1
Demonstrate knowledge, understanding and skills of processing and marketing of Agricultural produce.	**Establish a crop production or processing enterprise for sustenance and livelihood.** **Think-pair-share:** Learners in pairs brainstorm to come up with the meaning of enterprises in crop production. **Inquiry-based learning:** In mixed-ability groups, learners watch a documentary on the establishment, harvesting, processing, storage and marketing of selected crops (Vegetable e.g., tomatoes, pepper and onion; arable crops e.g., maize, cassava and yam; cash crops e.g., cocoa, shea and cashew). Learners write a report on their findings. **Project-based learning (Homework):** Learners in mixed-gender groups conduct survey in their community on the enterprises in crop production and present a report on their findings. **Project-based learning:** In mixed-gender/ability groups, learners undertake the cultivation, processing storage and marketing of the selected vegetable and arable crops. **Experiential learning:** Leaners build a portfolio and prepare a report on their activities on the field and make presentations to the class. **Project-based learning:** In mixed-gender groups, learners undertake the cultivation, processing storage and marketing of the selected vegetable and arable crops. **Experiential learning:** Leaners build portfolio and prepare report on their field activities.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	Project-based learning: In mixed-gender groups, learners undertake the cultivation, processing storage and marketing of the selected vegetable and arable crops. **Experiential learning:** Leaners build portfolio and prepare report on their field activities. Learners then present their report on all field activities at a plenary session in class.	
	3.5.3.LI.2	3.5.3.AS.2
	Establish an animal/fish production or processing enterprise for sustenance and livelihood **Think-pair-share:** Learners in pairs brainstorm to come up with the meaning of enterprises in animal/fish production. **Inquiry-based learning:** In mixed-ability groups, learners watch a documentary on the rearing, processing, storage and marketing of selected animals/fish (Ruminants e.g., cattle, sheep and goats; Non-ruminant e.g., pigs; Poultry e.g., domestic fowl, guinea fowl and ducks; Non-traditional e.g. rabbit, grass cutter and snails; Fish e.g. tilapia, mud fish and cut fish). Learners write a report on their findings. **Project-based learning (Homework):** Learners in mixed-gender groups conduct survey in their community on the enterprises in animal/fish production and present a report on their findings. **Project-based learning:** In mixed-gender groups, learners undertake the rearing, processing storage and marketing of the selected farm animals. **Experiential learning:** Leaners build portfolio and prepare report on their field activities. Project-based learning: In mixed-gender groups, learners undertake the rearing, processing storage and marketing of the selected farm animals.	Level 1 Recall Level 2 Skills of conceptual understanding **Level 3 Strategic reasoning** Level 4 Extended critical thinking and reasoning

	Experiential learning: Leaners build portfolio and prepare report on their field activities. Learners then present their report on all field activities at a plenary session in class. **Project-based learning:** In mixed-gender groups, learners undertake the rearing, processing storage and marketing of the selected fishes (tilapia, catfish and mud fish). **Experiential learning:** Leaners build portfolio and prepare report on their field activities. Learners then present their report on all field activities at a plenary session in class.		
Teaching and Learning Materials	• Functional internet connectivity • Computer • Videos/pictures on enterprises in crop production	• Video on processing and marketing of crops • Notebooks	• Pens • Textbooks and journals on Agribusiness