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| **Learning Planner** |
| **Subject** | Agriculture | **Week** | 4 | **Duration** | 120 minutes | **Form** |  1 |
| **Strand** | Modern Technical and Mechanised Agriculture | **Sub-Strand** | Modern Technical Agriculture |
| **Content Standard** | Demonstrate knowledge, understanding and skills of measurements, measuring tools and their uses in Agricultural production. |
| **Learning Outcome(s)** | Use the knowledge and skills acquired in measurements to determine the physical attributes of Agricultural inputs and produce. |
| **Learning****Indicator(s)** | 1. Outline the uses and maintenance procedures of measuring tools used in Agricultural production.
2. Relate the indigenous measuring tools to the standardized units of measurements in Agricultural production.
3. Demonstrate the use of simple scientific measuring tools to calculate parameters related to the various Agricultural sector.
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| **Essential Question(s)**  | * 1. How will the uses and maintenance procedures of measuring tools be used to improve agricultural production?
	2. How will the knowledge and skills acquired in measurements be used to determine the physical attributes of Agricultural inputs and produce.
	3. How will the simple scientific measuring tools be used to calculate parameters related to various agricultural sector.
	4. What pedagogical strategies will be employed to relate the indigenous measuring tools to the standardized units of measurements in Agricultural production, and demonstrate the use of simple scientific measuring tools to calculate parameters related to the various Agricultural sector?

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| **Pedagogical Strategies** | Think-pair-share, Collaborative learning, Experiential learningProject-based learning, Initiating talk for learning, Inquiry-based learning etc. |
| **Teaching & Learning Resources** | Charts, pictures or real samples of pH Meter, Thermometer, Rain Gauge, Anemometer, Grain Moisture Meter, Tensiometer, Plant Height/Length Measuring Tools, Weighing Scale, Leaf Area Meter, Chlorophyll Meter, Nitrate Test Strips, Dissolved Oxygen Meter, Vernier Calliper, Pipette, Bolga" Basket, "Tin" Containers, etc.  |
| **Key Notes on Differentiation** |
| Theme/Focal Area 1i. Learning Tasks* List Agricultural measuring tools used in your community.
* Discuss how to maintain the listed Agricultural measuring tools.
* Demonstrate how measuring tools are used in Agricultural production.

iii. Pedagogical Exemplars * 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.

iii. Key Assessments * Assessment Level 1: Sate at least three (3) basic farm tools and instruments used in Agricultural activities.
* Assessment Level 2: Make a photo album of at least five (5) Agricultural tools and instruments commonly used in your community.
* Assessment Level 3: Discuss the use of the following tools in Agricultural production: a. Metre rule b. A pair of callipers c. Spring balance d. Pipette.
* Assessment Level 4: Discuss the maintenance of at least three (3) basic farm tools commonly used in your community to ensure ease of Agricultural activities and longevity of the tools.

Theme/Focal Area 2i. Learning Tasks* State any indigenous measuring tools used in your community.
* Demonstrate how indigenous measuring tools are used in your community
* Discuss the implications of using indigenous measuring tools in Agricultural production.

ii. Pedagogical Exemplars * 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 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 are involved in the discussion. Groups with difficulties should be given the needed support.

iii. Key Assessments * Assessment Level 1: List at least two (2) indigenous measurement tools used in Agricultural activities.
* Assessment Level 2: Explain how the hands span is used as a measuring tool in Agricultural activity.
* Assessment Level 3: Discuss the implications of using indigenous methods of measurement in Agricultural activities.
* Assessment Level 4: Undertake the following indigenous measurements and provide their standardised measurements: a) Weight of one bowl of maize, b) Volume of one-quarter rubber bucket of water, c) Volume of 1 bottle of coconut oil d) Weight of 1 head pan of wheat bran.

Theme/Focal Area 3i. Learning Tasks* List the parameters that are measured in Agricultural production.
* Explain parameters used in Agricultural production.
* Calculate the various parameters used in Agricultural production.

ii. Pedagogical Exemplars * 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.
* 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.

iii. Key Assessments * Assessment Level 1: State at least two (2) parameters measured in Agricultural production.
* Assessment Level 2: Explain the term feed conversion efficiency as a parameter in Agricultural production.
* Assessment Level 3: Discuss the measurement of at least three (3) parameters used in Agricultural production.
* Assessment Level 4: Calculate the following parameters in Agricultural production:

a. The plant population on 2 hectares of maize farm planted at 50cm x 60cm with 2 plants/hill.b. The amount of fertiliser applied per plant if the application rate is 250kg/h. c. The live weight of a cow is 920kg and the dressed carcass weight is 370kg, calculate the dressing percentage.  |
| **Keywords/Phrases** | Agriculture, Tools, Measurements, Instruments, etc. |

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| **Lesson 1** |
| **Main Lesson drawing on Concepts, Skills and Competencies to reinforce as in the Subject Teacher Manual** |
| **Teacher Activity**  | **Learner Activity** |
| **Starter Activity (e.g., 10 minutes)****Using ice breaker, learners write at least three (3) tools and machines used for agriculture purpose.**  |
| **Introductory Activity (e.g., 15 minutes)**1. In mix ability groups, brainstorm on the meaning of agricultural tools.

Hints Encourage learners to tolerate each other’s view.**Activity 1 (e.g., 30 minutes*** Learners individually list examples of Agricultural tools and instruments and their use(s) and share with a peer.
* Assists learners with realia/pictures of tools and instruments to help learners list examples of tools and instruments in Agricultural production.
* Challenge talented students to list more tools and instruments in Agriculture production that are not part of the realia/pictures provided.

**Activity 2 (e.g., 35 minutes)*** Puts learners in mixed-ability/gender-based groups 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.
* Assist with leading questions to come up with their observations.

**Activity 3(e.g 20 minutes)*** Guide learners to 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.
 | **Introductory Activity** I. brainstorm on the meaning of agricultural tools.**Activity 1** 1. List examples if Agricultural tools and instruments and their uses and share with a peer.

**Activity 2** 1. Watch video/pictures on the appropriate uses and maintenance of some tools and instruments in Agricultural activities and discuss observations in groups.
* Demonstrate measurements in the laboratory and field using the measuring instruments provided.
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| **Assessment DoK aligned to the Curriculum and Subject Teacher Manual** |
| **Level 1*** Sate at least three (3) basic farm tools and instruments used in Agricultural activities.

**Level 2**Make photo album of at least 5 agricultural and instruments commonly used in your community.Level 3Discuss the use of the following tools in agricultural production: a. meter rule b. a pair of calipers c. spring balance d. pipette.Level 4Discuss the maintenance of at least 3 basic farm tools commonly used in your community to ensure ease of agricultural activities and longevity of the tools |
| **Lesson Closure****In completing this part, refer to the Essential Questions to check that learning has taken place.** |
| **Activity (e.g., 10 minutes)**1. Ask learners questions on what they have learnt whether it has some links with the essential questions.
2. Summarize key points and fill in gabs left by the learners.
3. Ask learners to read on Modern Technical Agriculture
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| **Reflection & Remarks** |
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| **Lesson 2** |
| **Main Lesson drawing on Concepts, Skills, and Competencies to reinforce as in the Subject Teacher Manual** |
| **Teacher Activity**  | **Learner Activity** |
| **Starter Activity (e.g., 10 minutes)**In mixed ability group, learners brainstorm to come up with some of the activities in the farm that involve measurement.  |
| **Introductory activity (e.g., 10 minutes)****In mixed ability group learners, write down the various implements/tools for measuring the various activities identified and present to the entire class.** **Activity 1 (e.g., 30 minutes)**In-Think- Pair- share Learners discuss the uses of the indigenous measuring tools in their community.Hints: i. Teacher should use pictures to guide learners in the identification of the indigenous measuring tools. ii. Learners with abilities should be challenged to give more examples of the indigenous measuring tools. **Activity 2 (e.g., 30 minutes)**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. Hints: i. Learners also prepare a table showing the equivalent values of indigenous measurement units and their corresponding standardised units. ii. learners with difficulty in using the measuring instruments should be given the needed support. iii. Ensure learners take accurate measurements to avoid distortions. iv. Teacher should challenge learners with abilities to compare more indigenous measurements with standardized measurements. **Activity 3 (e.g., 30 minutes**In mixed ability groups, Learners discuss the implications of using the indigenous measuring tools in Agricultural activities in mixed ability groups. Hints: i. Teacher should ensure that all learners are involved in the discussion. ii. Groups with difficulties should be given the needed support. | **Introductory activity**  **In mixed ability groups write down the various implements/tools for measuring the various activities identified and present to the entire class.** **Activity 1**In-Think- Pair- share discuss the uses of the indigenous measuring tools in their community**Activity 2**  In mixed-ability groups measure quantities of Agricultural inputs and products using the indigenous methods and the standardised measuring instruments to determine the actual measurements. **Activities 3**In mixed ability groups, discuss the implications of using the indigenous measuring tools in Agricultural activities in mixed ability groups.  |
| **Assessment DoK aligned to the Curriculum and Subject Teacher Manual** |
| **Level 3*** Level 1: List at least two (2) indigenous measurement tools used in Agricultural activities.
* Level 2: Explain how the hands span is used as a measuring tool in Agricultural activity.
* Level 3: Discuss the implications of using indigenous methods of measurement in Agricultural activities.
* Level 4: Undertake the following indigenous measurements and provide their standardised measurements: a) Weight of one bowl of maize, b) Volume of one-quarter rubber bucket of water, c) Volume of 1 bottle of coconut oil d) Weight of 1 head pan of wheat bran.

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| **Lesson Closure** **In completing this part, refer to the Essential Questions to check that learning has taken place.**  |
| **Activity (e.g., 10 minutes)** a) Ask learners questions on what they have learnt whether it has some links with the essential questions.1. Summarize key points and fill in gabs left by the learners. Ask learners to read on Modern Technical Agriculture.
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| **Reflection & Remarks** |
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