



TVET LEVEL II



AGRICULTURE

Meat Processing

TRAINER MANUAL



Approved by:  Workforce
Development
Authority



USAID
FROM THE AMERICAN PEOPLE



Acknowledgements

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Under Rwanda Polytechnic (RP) supervision and involvement



Under Workforce Development Authority (WDA) guiding policies and directives



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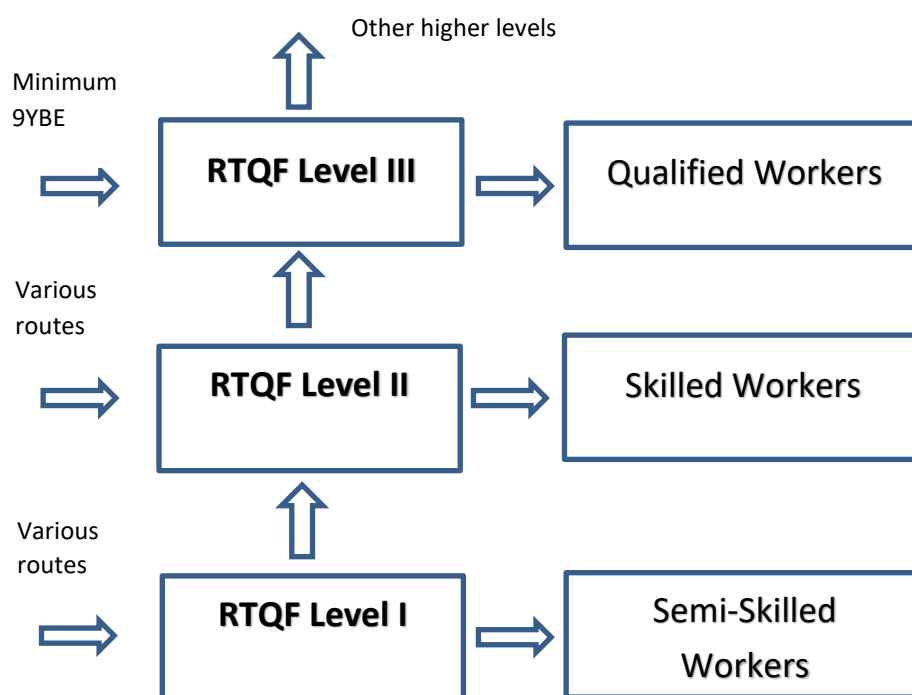
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Introduction to RTQF Level II Training Modules

Background

Rwanda Polytechnic, with support of and in collaboration with USAID Huguka Dukore Akazi Kanoze, has developed RTQF TVET Level II programs that combine basic education, soft skills and vocational skills modules. Bridging the gap between Level I and Level III programmes, Level II aims to prepare learners who have a minimum education level of Primary 6 or equivalent to continue with their education or become skilled workers in the labour force.



Following the Workforce Development Authority (WDA) curriculum development process that involved experts from Rwanda Polytechnic, Rwanda Education Board, Ministry of Agriculture, technical vocational institutions, Education Development Center, Akazi Kanoze Access and other technical experts, training modules were developed in basic education, soft skills (work readiness) and, initially, agriculture. Additional vocational areas will be added over time. Trainees will be trained in all Basic Education and Soft Skills modules listed below, as well as in 6 - 8 modules that make up their chosen technical vocational programme.

Module Requirements:

Basic Education	Soft Skills	Vocational Skills
<ul style="list-style-type: none">EnglishKinyarwandaMathematics	<ul style="list-style-type: none">Basic Entrepreneurship SkillsICT EssentialsCommunication Skills	<ul style="list-style-type: none">Vocational programmes will have a set of 6 – 8 required technical modules.

- Integrated Science (Physics, Chemistry, Biology)

- Safety, Health and Sustainable Environment
- Personal Development and Career Guidance

E.g. Food Crop Production and Processing includes the following modules:

1. Food Crop Production
2. Small Scale Post-Harvest Operations
3. Growing Medium
4. Food Safety and Sanitation
5. Food Preservation and Storage
6. Flour Processing

Organization of the Training Manuals

For each module there is a Trainer Manual and a Trainee Manual. These manuals, based on the curricula for each subject, are divided into Learning Units, and each Learning Unit includes 3 – 5 Learning Outcomes. The learning outcomes make up the essential skills, knowledge and attitudes to be acquired by trainees. To make the Trainee Manual more user friendly, Unit and Topic are used respectively for Learning Unit and Learning Outcome. The number of hours per training module varies, ranging between 30 and 120 hours.





Teaching & Learning Methodology of RTQF Level II 2 TVET Materials

The teaching and learning methodology used in the materials is based in experiential and adult learning. Activities are designed to engage trainees, build upon what they know and learn and provide them with opportunities to build their skills in the classroom and in the workplace. More specifically, guiding principles in the development of the manuals include:

- ▶ Building on participants' knowledge, skills and experiences
- ▶ Facilitating a learning process through active engagement of participants rather than through lecturing
- ▶ Providing opportunities to practice – inquiry based and hands on practice, both in the classroom and workplace
- ▶ Using simple and clear language
- ▶ Connecting to the real world: use local resources and the environment for learning
- ▶ Promoting critical thinking through properly debriefing activities and asking questions that get learners to think, analyze, relate issues and topics to their own lives and come up with solutions

- ▶ Applying social inclusion principles: Finding ways to include all types of youth (and trainers) – males and females; different cultural/ethnic/religious backgrounds, people with disabilities (PWD); people with different types of health status ...
- ▶ Encouraging risk taking – promote questioning and being free to explore
- ▶ Promoting habits of mind that support life-long learning: curiosity and wonder, open mindedness, creativity

These principles are reflected in the layout and flow of activities in the manuals:

1. **Key Competencies:** Table found at the beginning of each Learning Outcome that describes the main knowledge, skills and attitudes to be gained by the end of the activities.
2. **Self-Assessment:** Conducted at the beginning and end of each Learning Unit to get a sense of trainees' knowledge and skills going into it and what they have gained by the end of the Learning Unit (and steps they need to take to further their understanding and skills).
3.  **Getting Started Activity:** Typically, a quick activity or questions to 1) give the trainer a sense of trainees' existing knowledge and skills; 2) spark the interest of trainees in the topic; 3) introduce the objectives and key competencies of the topic.
4.  **Problem Solving Activity:** A challenging activity to get trainees engaged and to learn through discovery instead of memorization of facts. A variety of teaching and learning methodologies are used, including individual and group work such as reading real life work-based scenarios and answering accompanying questions to activities such as identifying proper tools and equipment from the school workshop to conduct a certain activity. Following the sharing of responses, the trainer guides trainees through the content and processes being introduced.
5.  **Guided Practice Activity:** Building on the concepts and skills gained in the Problem Solving Activity, the trainer guides trainees through practical examples.
6.  **Application Activity:** Consolidates trainees' knowledge and skills through a real-life application of the topic in the classroom, community or workplace. Trainees are given more independence in applying what they have learned.

7. **Key Facts boxes:** Throughout the Trainee Manual, one will find Key Facts boxes. These contain the main information or content for a given Learning Outcome. They are there for the trainees' reference and are used throughout the different types of activities.



8. **Points to Remember:** List of the top key learning points or “take-aways” from the topic.



9. **Formative Assessment:** Questions and activities to assess trainees' level of understanding of the concepts introduced.



10. **Summative Assessment:** Based on the integrated, real life situation approach used in other TVET levels, this is done at the end of every module for agricultural modules and, with some variations, at the end of each Learning Unit for Basic Education and Soft Skills modules.



11. **Self-Reflection:** Trainees re-take the Self-Assessment given at the beginning of the Learning Unit and identify their strengths, challenges and actions to improve their level of competence.

The Trainer and Trainee Manuals are meant to be used in conjunction with each other and are well coordinated through the headings and labelling of activities. The trainer will always be able to refer trainees to specific activities by the coordinated numbering system. For instance, a specific exercise might be labelled Topic 1.2 Task 2. The Topic is the number of the Learning Outcome and the task is the specific exercise to be done. The Key Facts are also numbered for easy reference. These nor the Self-Assessment tables are in the Trainer's Manual so the trainer should have a copy of both manuals.

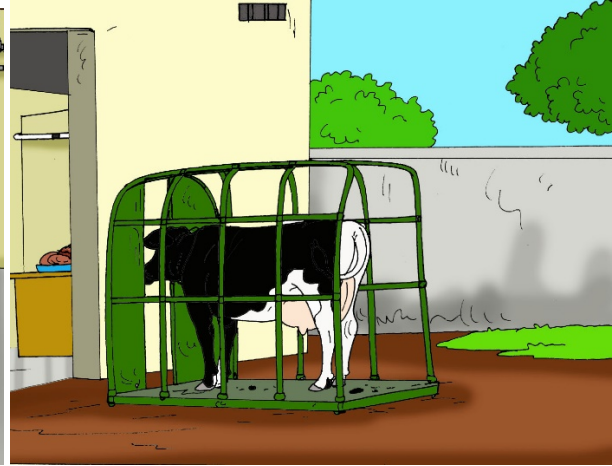
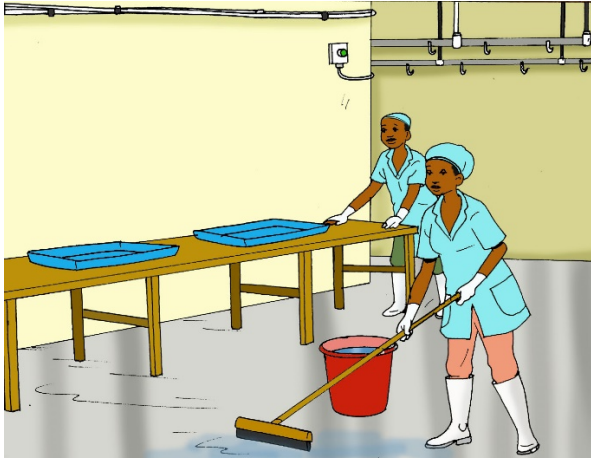
The Trainer's Manual includes answers (or guidelines to the trainer as appropriate) to Formative and Summative Assessments as well as to problems given throughout the activities. Summative Assessments are not included in the Trainee's Manual. These are meant to be used as a guide for those who will be developing a context-appropriate Summative Assessment at the end of the Module or Learning Unit. Basic Education and Soft Skills modules include Summative Assessments at the end of every Learning Unit while the technical modules include it only at the end of the module.

Lastly, there is a section in the Trainer's Manual for additional information to the trainer that includes either specific information or references to information that can help them deepen their understanding of the particular content.

MEAT PROCESSING

Learning Units	Learning Hours	Learning Outcomes
Learning Unit 1: Prepare the workplace and animals for slaughter	20	1.1 Apply hygiene and sanitation practices according to site requirements
		1.2 Restrain animals using techniques that ensure the welfare of the animal
		1.3 Stun animals using techniques that ensure the welfare of the animal
Learning Unit 2: Prepare a carcass for butchering	20	2.1 Prepare, check, and adjust materials, tools, and equipment to cut meat prior to butchering
		2.2 Skin, eviscerate, wash, and cut a carcass
		2.3 Prepare meat cuts
Learning Unit 3: Make meat products	30	3.1 Prepare ingredients for meat products
		3.2 Grind mixtures for meat products
		3.3 Assist in making meat products
		3.4 Store meat products

Learning Unit 1: Prepare workplace and animals for slaughter



Learning Outcomes








By the end of the Learning Unit, trainees will be able to:

- 1.1** Apply hygiene and sanitation practices in accordance with work instructions
- 1.2** Restrain animals to ensure animal welfare
- 1.3** Stun animals to ensure animal welfare

Learning Unit 1 Self-Assessment

1. Ask trainees to look at the illustrations above (in their Trainee Manuals) and discuss what they see. What topics do they think this unit will include based on the illustrations? After some brainstorming, share the main topics.
2. Ask trainees to fill out the self-assessment at the beginning of the unit in their Trainee Manuals. Explain that the purpose of the self-assessment is to become familiar with the topics in the unit and for them to see what they know or do not know at the beginning. At the end of the unit, they will do a self-reflection, which will include re-taking this self- assessment to see improvements and identify strengths, areas that need improvement and actions to take. The self-assessment is not a test!

Learning Outcome 1.1: Apply hygiene and sanitation practices according to work site requirements

	<p>Objectives: By the end of the learning outcome, trainees will be able to:</p> <ol style="list-style-type: none"> Describe personal hygiene in slaughter work zones Explain environmental hygiene in a slaughterhouse Describe cleaning procedures used in a slaughterhouse Determine frequency of cleaning processes at a slaughter work zone
	<p>Time Required: 10 hours</p>
	<p>Learning Methodology: Brainstorming, group work, class discussion, field visit</p>
	<p>Materials Needed:</p> <ul style="list-style-type: none"> Standard training materials: Flipchart, marker pen, pens If available: Internet and reference books
	<p>Preparation:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Prepare visit with local butchers in advance.
	<p>Cross Cutting Issues:</p> <ul style="list-style-type: none"> ✓ Gender: Provide equal opportunities to both boys and girls during the lesson as well as gender balance when forming groups. ✓ Peace and values education: Promote teamwork and respect for others' views and work. ✓ Inclusive education: Be sensitive to differences in learning abilities and uses a variety of activities and materials to cater to different learning styles. ✓ Environment and sustainability: Consider the environment when handling and disposing of cleaning solutions and other waste products.
	<p>Prerequisites:</p> <ul style="list-style-type: none"> ▶ Apply Safety, Health and the Environment (SHE) policies ▶ Basic calculations and basic chemistry and biology ▶ Basic workplace English

Key Competencies:

Knowledge	Skills	Attitudes
1. Explain main principles of environmental hygiene	1. Apply environmental hygiene in a slaughter zone	1. Methodical
2. Explain main principles of personal hygiene	2. Apply personal hygiene	2. Diligent
3. Describe cleaning and sanitation procedures	3. Perform cleaning and sanitation	3. Problem Solver



Steps:



Getting Started: What do we know and where are we going?

1. Ask trainees to open their manuals and look at **Topic 1.1 Task 1**. Trainees will work in pairs to observe the photograph and to respond to the questions. Trainees will have 5 minutes to complete the task.
2. Tell the pairs to observe the photograph below. They should look at all the details provided and respond to the following questions with as much detail as possible. There are many correct answers so tell them to list as many as they can in each response.
 - a. How can you identify this photograph as a slaughterhouse?
 - b. What are the personnel doing in the photograph—and why?
 - c. What will the work team do next?
 - d. List out what the personnel are wearing—and explain the importance of each piece.



3. Ask a few volunteers to share responses and discuss. Clarify any misconceptions about the trainees' outcomes.

Possible Answers:

- a. We can see slaughtered animals hanging from the hooks, and blood on the floor
- b. The group of people are cleaning using hoses. We cannot see any evidence of soap, but it may likely be inside the hose water—or they are rinsing the soap away. They are cleaning because they have completed the killing of the animals, but the next step will be to prepare the meat for human consumption. Killing and skinning the animals may result in contamination of the area so cleaning is important before the meat is processed.
- c. The next step will be to butcher the carcasses—and prepare the meat for human consumption. To avoid any germs or dirt getting on the meat which will be eaten it is good to clean at this step in the process, that is, prior to the actual butchering of the meat.
- d. Personnel are wearing: hard-hats in case anything heavy falls on them from above (like hooks or the dead animal), hair nets so hair doesn't fall into the meat and contaminate the product, rubber pants, jackets and aprons—because they can be sanitized before and after each use to ensure a clean and hygienic environment, gloves both to protect the workers' hands and to ensure that the worker is not passing dirt and germs from their hands to the product, Face masks—so the workers are not breathing bad germs onto the meat (or onto each other) and boots (can't

¹ U.S. Department of Agriculture. (2014, May). 20120106-OC-AMW-0210 [Photograph]. Public Domain Files. https://www.google.com/url?sa=i&url=http%3A%2F%2Fwww.publicdomainfiles.com%2Fshow_file.php%3Fid%3D13996097425040&psig=AOvVaw04KreOAK9kyCsJGsd4GzJ&ust=1596628060358000&source=images&cd=vfe&ved=0CA0QjhxqFwoTClkxZq9gesCFQAAAAAdAAAAABAD

see, but safe to assume that they are there) to protect feet from falling things, and to be sanitized before and after each use.

4. Introduce the learning outcome and Key Competencies table with the type of knowledge, skills, and attitudes they will gain by the end of this topic.



Problem Solving Activity

1. Ask trainees to turn to **Topic 1.1 Task 2** in their Trainee Manuals. Form groups of 3.
2. Ask groups to close their eyes and to think back on any time they have seen animals being slaughtered. Consider the slaughter of at least two different animals in two different environments. For example, chickens slaughtered at their homes, and cows slaughtered at the village marketplace. Remember as many of the details as you can—focus on preparation of the area before the animals were killed, and how the area was cleaned up after the animal was slaughtered.
3. Trainees will discuss memories as a group, but each trainee should fill in their own table. Trainees will use two different animals in two different environments.

Type of animal:	Type of animal:
Description of the place where this animal was slaughtered: 1. 2. 3.	Description of the place where this animal was slaughtered: 1. 2. 3.
Steps taken to clean the area and animal prior to the slaughter: 1. 2. 3.	Steps taken to clean the area and animal prior to the slaughter: 1. 2. 3.
Steps taken to keep the area clean during slaughter: 1. 2. 3.	Steps taken to keep the area clean during slaughter: 1. 2. 3.

Steps taken to clean up after the slaughter: 1. 2. 3.	Steps taken to clean up after the slaughter: 1. 2. 3.
Identify areas where contamination of the meat product could have happened: 1. 2. 3.	Identify areas where contamination of the meat product could have happened: 1. 2. 3.

4. When groups have completed their tables, let each group share their table with the class. Allow trainees to ask one another questions to clarify. Clarify any misconceptions as trainees present.
5. Ask a volunteer to read **1.1 Key Facts** aloud to the class. Provide additional examples and details if trainees need more clarification or if there are misunderstandings.



Guided Practice Activity:

1. Ask trainees to turn to **Topic 1.1 Task 3** in their Trainee Manuals. Explain that they will visit an actual workplace (slaughterhouse) so this work is preparing for that visit. Trainees will observe and take notes regarding the cleaning and sanitation procedures seen during their visit. To prepare for the field trip—and to make the observational time more valuable—the class will consider the types of contaminations that may occur, the products to eliminate contaminants, and good procedures to use.
2. As a class, complete Brainstorm 1 using these questions:
 - a. What contaminants may be found in a slaughterhouse?
 - b. List out a set of steps that outline a good general process for cleaning a slaughterhouse, before, during, and after an animal is slaughtered.

Answers will vary but should contain at minimum the following:

- a. Dirt from the ground/soil (minerals) and from people's dirty hands or clothing. Blood from the slaughtered animal (proteins). Germs transmitted from an ill person conducting the butchering processes to meat.
- b. Before
 - Conduct a dry cleaning of the area, that is sweep (or shovel) away anything unclean that is in the area.

- Scrub the area with soap and water, including the table surfaces as well as the floors and surrounding areas to ensure that no nearby contamination is brought in during the slaughter
- Rinse and Disinfect the area—and eliminate any extra water by drying surfaces and floors
- Ensure that person is wearing sanitized and protective clothing (hairnets, aprons, gloves, boots, etc.).

During:

- Use a 'clean as you go' strategy so whenever a mess is present, take time to clean it away with soap and water, scrubbing and rinsing.
- Ensure tools are all sanitary by cleaning them both before and directly after each use.
- Ensure personnel is wearing sanitized and protective clothing per above.

After:

- Conduct a thorough dry cleaning of the area by sweeping and shovelling away any waste.
- Scrub the area with soap and water, including the table surfaces as well as the floors and surrounding areas to ensure that no nearby contamination is brought in during the slaughter
- Rinse and Disinfect the area—and eliminate any extra water by drying surfaces and floors
- Dispose of all waste, including the animal waste, the cleaning solutions, and the dirty water in a correct manner—that is ensure that nothing will pollute water sources, areas where people or animals live, or farm fields.

3. As a class, reflect on the processes that have been outlined in **Topic 1.1 Task 3**. Discuss the things that are needed to prepare a slaughter area in a hygienic manner. Let trainees give suggestions and lists the things mentioned on the board for Brainstorm 2 under the headings of:

- Tools and materials needed:
- Cleaning products needed:

Answers may include:

- Tools: brooms, shovels, and brushes, buckets or hoses, garden sprayers, towels, ...
- Cleaning products: detergents (alkaline or acid based), sanitizers, disinfectants, chlorine bleach. And, of course, water!

4. Having completed the list of tools and supplies needed, now work on Brainstorm 3 with trainees about how to go about the cleaning process. Together with the students complete the following brainstorm:

- Outline a generalized cleaning process or a checklist ensuring that the slaughter zone is hygienic.

Answer:

- a. The process can be broken down into two steps: a dry cleaning then a wet cleaning. As follows:
- Dry cleaning: this process physically removes any scraps and dirt from the zone. Use a brush, broom and/or shovel.
 - Wet cleaning: Start with a pre-rinse with water. Apply detergent and scrub table surfaces and floor with soap and water. Rinse with water (preferably warm water if available). Disinfect the area with chlorine bleach then dry the cleaned area



Application Activity

1. Explain that each trainee will visit a butcher shop or slaughterhouse. If one is established in the school compound, then the class can do the visit together and at a time that the trainer has arranged with those in charge of the slaughterhouse. Otherwise, ask the trainees to visit the butcher in their home communities. They may need to plan the visit in advance so they can be sure to be there when an animal is actually being slaughtered, so they should discuss this visit ahead of time with the butcher.
2. Explain to trainees that this activity will provide them with real world of work experience which is important and a valuable part of their education. To ensure that each visit has a clear purpose and is guided by the objectives of this lesson, the following task will focus their observations by providing an outline of questions that they will each respond to individually depending on the zone they visit.
3. Ask a trainee to read the following questions aloud to the class and then discuss the questions as a class so all trainees are clear on exactly what they will be doing during their work observation activity.
4. Each trainee will submit a small report that covers all of the questions, so encourage trainees to take good notes and write clear responses to each of the questions in **Topic 1.1 Task 4**.
 - a. Describe the slaughtering zone—what do you see there that is sanitary? What can you identify as not clean? What needs to be done to upgrade the zone to make it hygienic?
 - b. What safety equipment or practices do you observe?
 - c. Describe the following:
 - personal hygiene practices used
 - environmental hygiene practices used
 - cleaning practices used

- d. What protective and sanitary clothing are the personnel wearing?
- e. Describe the cleaning methods used –list out the process you observe including the tasks done, the tools used, and the names of any cleaning products.
- f. Write down any other observations that you think are relevant to sanitation and safety.

Answers will vary.

5. Following the visit, collect the reports produced by each trainee. Reads each report and provide individual feedback to each trainee. You may pick 2 or 3 reports to share with the class if they are well prepared and if they illustrate different types of slaughter zones and positive techniques for safety and sanitation.



Points to Remember

- Wear protective clothing—which can be sanitized between uses.
- Cleaning should take place before, during, and after slaughtering an animal.
- Plan ahead to minimise contamination of any meat products.



Formative Assessment

Select the correct answer for each question.

Answers are in bold.








1. Personal hygiene includes:
 - a. Pest control
 - b. Hand washing**
 - c. Using electrical equipment safely
2. Environmental hygiene includes:
 - a. Use of gloves
 - b. Liquid and solid disposal**
 - c. Equipment available
3. The following are steps of cleaning, except:
 - a. Disinfecting
 - b. Rinsing**
 - c. Scrubbing

d. Mincing and chopping

4. List steps for a slaughterhouse cleaning procedure, include when (in the butchering process) should each step be done (or repeated), and tools and materials needed at each step.

Answer: Varies. See the answer to **Topic 1.1 Task 3**.

Learning Outcome 1.2: Restrain animals using techniques that ensure the welfare of the animal

	<p>Objectives: By the end of the learning outcome, trainees will be able to:</p> <ol style="list-style-type: none"> Describe different restraint devices used in slaughtering operations Explain and perform restraint technique used in slaughtering operations Explain how animal welfare as it relates to slaughter
	<p>Time Required: 5 hours</p>
	<p>Learning Methodology: Brainstorming, group discussions and group research, field visit</p>
	<p>Materials Needed:</p> <ul style="list-style-type: none"> Standard training materials: Flipchart, markers, pens If available: Internet and reference books, Video/DVD Additional materials: Abattoir, animals, and restraining material
	<p>Preparation:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Coordinate with local slaughterhouse to prepare for field visit. <input type="checkbox"/> Prepare handcuff knots and others for demonstration with trainees.
	<p>Cross Cutting Issues:</p> <ul style="list-style-type: none"> ✓ Gender: Provide equal opportunities to both boys and girls during the lesson as well as balance gender when forming groups. ✓ Peace and values education: Promote teamwork and respect for others' views and work. ✓ Inclusive education: Be sensitive to differences in learning abilities and uses a variety of activities and materials to cater to different learning styles. ✓ Environment and sustainability: Consider the environment when handling all waste products.
	<p>Prerequisites:</p> <ul style="list-style-type: none"> ▶ Understanding of how to prepare livestock for slaughter

Key Competencies:

Knowledge	Skills	Attitudes
1. Describe restraint devices	1. Use restraining devices on animals	1. Patient
2. Explain restraining techniques	2. Decide which restraint is best for a given situation	2. Methodical



Steps:

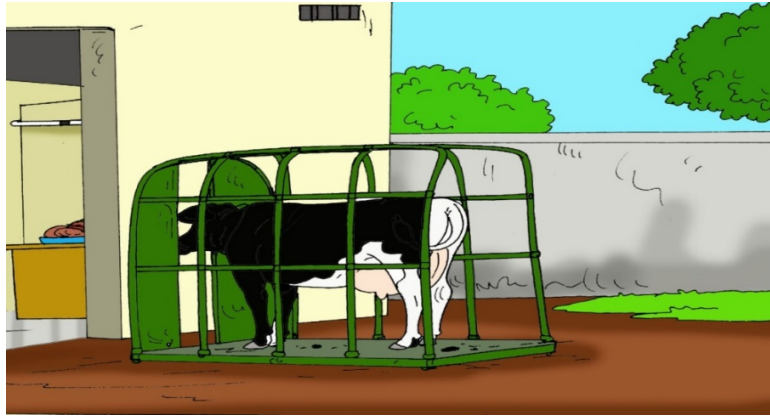


Getting Started: What do we know and where are we going?

1. Ask trainees to turn to **Topic 1.2 Task 1** in their manuals. Ask if they have ever noticed how animals are restrained—that is, held in place so movements are restricted—prior to being slaughtered. Ask several trainees to share their experiences. After trainees have shared HOW animals are restrained, ask if anyone has ideas about WHY it is important to restrain animals as they are prepared for slaughter.

Answers Responses regarding how animals are restrained will vary, which is fine, but the reasons why an animal is restrained should include: to make it easier/quicker to kill the animal, thus minimise any suffering of the animal which ensures the welfare of the animal and also to ensure that the workers are not injured by the animal should it move unexpectedly.

2. The next portion will be completed as a Think-Pair-Share activity. Ask trainees to observe the picture and respond to the questions. Then trainees will share their answers with a partner. Together they will expand their lists of observations/ideas in response to all questions. After a few minutes of sharing with a partner, ask trainee pairs to share out with the entire class.
 - a. List at least 3 reasons a cow may be put into the restraint shown in the picture.
 - b. If this restraint was used prior to slaughter, what other devices might be added to further restrain the cow?
 - c. Give reasons that this is NOT a good restraint, if the intention is to slaughter this cow.



Answers:

- a. For transport, if the cow is ill or about to give birth, if the cow is soon to be slaughtered, etc.
 - b. A rope securing the head, tying the feet, a closure for the cage at the back of the cow, etc.
 - c. There are so many bars that it might be hard to get a clean cut on the cow's neck, it may be difficult to sanitize such a cage, depending on the material of the cage, the cow can still move.
3. Explain to the class that during this outcome, trainees will learn about and practise different techniques used to restrain animals prior to slaughter. Introduce the learning outcome objectives as well as the knowledge, skills, and attitudes that trainees will gain.



Problem Solving Activity

1. Ask Trainees to turn to **Topic 1.2 Task 2** in their trainee manuals. Inform trainees that when animals are restrained prior to slaughter, there are three general techniques for restraining animals which are:
 - a. Psychological
 - b. Physical
 - c. Chemical
2. Write these three restraint techniques across the top of the board. Ask trainees to think about the words used to help guess the meanings, and brainstorm ideas.

Answers:

- a. Psychological restraint is when an animal believes it cannot move even if it actually could move.
- b. Physical restraints are actual devices that hold the body of the animal tightly in place.

- c. Chemical restraints are restraints that use drugs to hinder or stop movements of an animal.
- 3. After discussions, tell trainees that in this class we will focus on learning more about the physical restraint techniques. They will learn about devices available and will be able to practice the restraints on live animals.
- 4. Ask a volunteer to read aloud the **1.2 Key Facts**. Provide examples and further explanation as needed. Give trainees time to review and encourage any questions.
- 5. Focus attention on the Animal Welfare details that are relevant for the trainees as they prepare to slaughter animals. Explain that as butchers they are expected to **KNOW** and **FOLLOW** the guidelines to minimise animal suffering and to ensure safe livestock practices.



Guided Practice Activity

1. Explain to the class that you will be going as a group to visit a local slaughterhouse. In preparation for this visit, it is important for trainees to be knowledgeable about the processes that they will observe. As such, the class will do some research on animal restraint techniques prior to the visit. Different animals require different kinds of restraining techniques and devices. The different devices depend on the size/strength of the animal as well as the materials that are locally available to construct or purchase such restraints. Cultural practice also plays a part in the way animals are restrained prior to butchering. For example, the Muslim faith has strict regulations on how the animals are to be treated prior to butchering
2. Divide the class into three groups and ask them to turn to **Topic 1.2 Task 3** in their manuals. Each group will be responsible for research on restraining one type of farm animal then the groups will share what they have learned with the class so the entire class will benefit from others' research and everyone will be ready for the visit.
3. Each group will prepare a short presentation to be given to the class after the research period. Trainees should review the resource books available at your school, use information available from the internet, and rely on local knowledge. It is advised that trainees go out and interview a butcher in their community to gather knowledge there too. Drawings and photos may be helpful in their explanations.
 - a. Group 1 will research how **cows** are prepared and restrained for slaughter.
 - b. Group 2 will research how **sheep/goats** are prepared and restrained for slaughter.

- c. Group 3 will research how **pigs** are prepared and restrained for slaughter.
4. Trainees will use time in class and time outside the classroom to complete this activity. When all groups have completed their presentations take class time so each group can share their learning with the class. Encourage trainees to ask questions of each other and trainer will verify details and add explanations or provide additional examples as needed.



Application Activity

1. This activity will take place at a field visit to the slaughterhouse established on the school compound, if available, or a local slaughterhouse. You prepare the visit prior to the scheduled outing.
 - a. Ensure the timing is correct so the trainees will be at the site to observe actual work (restraint of animals prior to slaughter as well as the slaughter itself) during the time of the visit.
 - b. Prepare the butchers for the visit so the butchers can demonstrate relevant restraining techniques when the trainees are there to observe.
 - c. Request that the butchers work with the trainees to allow the trainees to participate in the restraining of animals, so the trainees gain actual experience in the restraint of animals.
2. Explain to trainees that they will be visiting a slaughterhouse. Remind them that the previous visit the focus was on practices that revolved around sanitation and hygiene. Ask for some trainees to share some observations and learnings from the first visits. Note that we will keep the learning from that learning objective in mind, but now we are moving on to a focus on how animals are restrained to minimise the suffering of the animal during slaughter, and to protect the personnel from harm should the animal move unexpectedly.
3. Similar to the last visit, this visit will be guided by a set of questions outlined in **Topic 1.2 Task 4**. Ask a volunteer to read the questions aloud and discuss them as a class to ensure that all trainees have a clear understanding of the task and of the questions that will be guiding their field visit. Questions are as follows
 - a. Describe the slaughterhouse or zone you are visiting. Include details on the sanitation practices you note and list out all the different animals that you see there.
 - b. Make a list of all the tools being used and all the protective clothing that you see worn by personnel.

- c. Explain whether the butchering personnel are using psychological, physical, or chemical restraints (or if they use a combination). Describe the process of restraining animals prior to slaughter carefully, including any tools or materials used, and explanations of all actions that are taken by the personnel involved in the restraint of the animal. Be sure to include the reason behind each of the actions that are taken.
 - d. You may be given the opportunity to participate in the restraint of an animal. Describe exactly what you did, and why each action was important.
 - e. Write down any other relevant observations, including any recommendations you may have to improve the procedures observed.
4. After the visit, facilitate a class discussion based on the questions above. Clarify any misunderstandings.



Points to Remember

- Proper restraint minimises the suffering of an animal being prepared for slaughter.
- Proper restraints protect personnel from animals who may kick, be moody, bite, etc.
- Check restraining devices and ensure all tools are in place before use.



Formative Assessment

Answer the following open questions using complete sentences.

1. Give the three general types of restraints used on animals and explain each.
2. Is the bull nose ring the same as the bull holder? Explain your answer.
3. Give at least three restraining methods where a rope can be used.
4. Give two kinds of safety gear that personnel should wear.

Answers:








1. Psychological—non-restrictive restraint—based on behaviour but used with other restraints.

Physical –involves using the handler’s hands or body and limits actual movement of animal.

Chemical–uses drugs such as sedatives or tranquilizers.

2. No, a bull nose ring is fixed to the nasal septum of a bull while a bull holder is sometimes attached to the bull nose ring to control the bull.
3. Restraining foreleg, restrain hind leg, tie an anti-kicker knot, or casting.
4. Hard-hats and boots

Learning Outcome 1.3: Stun animals using techniques that ensure the welfare of the animal

	<p>Objectives: By the end of the learning outcome, trainees will be able to:</p> <ol style="list-style-type: none"> Apply different stunning methods used in slaughtering operation Apply sticking techniques in slaughtering operation Use shackling methods in slaughtering operation
	<p>Time Required: 5 hours</p>
	<p>Learning Methodologies: Group work, demonstration, site visits</p>
	<p>Materials Needed:</p> <ul style="list-style-type: none"> Standard training materials: Flip chart, markers, pens If available: Internet and reference books, Video/DVD Additional materials: Stunning tools
	<p>Preparation:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Prepare field visit to ensure stunning can be observed and practiced by trainees in live work environments. <input type="checkbox"/> Gather all tools and equipment needed for class and field visit
	<p>Cross Cutting Issues:</p> <ul style="list-style-type: none"> ✓ Gender: Provide equal opportunities to both boys and girls during the lesson as well as balance gender when forming groups. ✓ Peace and values education: Promote teamwork and respect for others' views and work. ✓ Inclusive education: Be sensitive to differences in learning abilities and uses a variety of activities and materials to cater to different learning styles. ✓ Environment and sustainability: Consider the environment when handling and disposing of cleaning solutions and other waste products.
	<p>Prerequisites:</p> <ul style="list-style-type: none"> ▶ Animal handling for slaughter ▶ Sanitation procedures ▶ Restraint techniques

Key Competencies:

Knowledge	Skills	Attitudes
1. Explain different stunning methods and when to use each method	1. Perform stunning	1. Decisive
2. Explain benefits of shackling and best positions during slaughtering	2. Shackle live animals	2. Active
3. Explain difference between sticking techniques and when each is valuable	3. Conduct sticking activity	3. Precise



Steps:



Getting Started: What do we know and where are we going?

1. Ask trainees to turn to **Topic 1.3 Task 1** in their Training Manuals. With the person next to them, they should observe the picture below. Tell them to describe what they believe to be happening in the picture and explain why that process is being done as part of the slaughtering techniques.



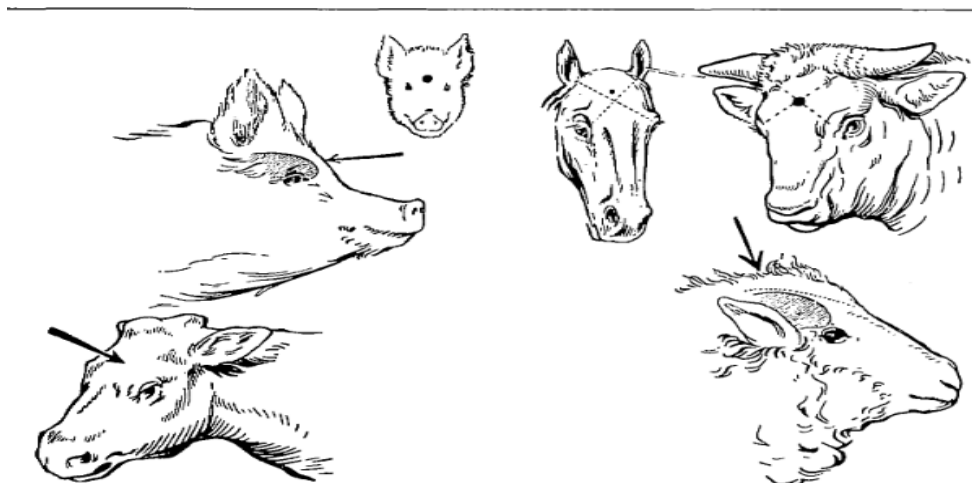
Answer: The man is stunning a cow that is being held in a restraining box. This is being done so the cow will not suffer when it is killed, nor will the cow move unexpectedly and harm the personnel.

2. Ask trainees to share their answers and ensure that by the end of the discussion, all agree that the man is stunning a cow in a correct manner (while the cow is carefully restrained in a crate).
3. Introduce the learning outcome with the knowledge, skills, and attitudes for this topic.



Problem Solving Activity

1. Ask trainees to work in pairs. They will look at the picture that is given in their manual under **Topic 1.3 Task 2** and discuss the reasoning for stunning the animals shown in the places indicated in the picture. Tell them to respond to all the questions as fully as possible—even if it means making an educated guess.



2

2. Tell trainees to respond to the following questions:
 - a. Describe, in words, the exact location for stunning for each of the animals shown in the pictures above.
 - b. Why is the place different for each animal?
 - c. Explain why it is important to know the exact area to stun each different kind of animal.

² Alpha International Corp. (1980). *The Schermer mechanical stunning apparatus* [Drawing]. Semantic Scholar. <https://pdfs.semanticscholar.org/2ede/b848d773a778e718d5263433ebbb9bd01834.pdf>

Answers:

- a. Cow: between the eyes and slightly above the eye level.
Pig: between the eyes and slightly above the eye level.
Horse: in the centre of the forehead—just above the centre of a cross that could be drawn between eyes and ears of a horse.
Bull: in the centre of the cross that could be drawn between the eyes and the horns of the bull.
Sheep: in the centre of the head but behind the ears, in the back of the peak of the head.
 - b. The place for stunning is different for each animal because the heads are all shaped differently, and they have softer parts of the skull in different places.
 - c. It is important to understand the exact correct place to stun each animal so the animal will avoid suffering and stress during slaughter.
3. When pairs of trainees have completed the task, ask volunteers to share their answers with the class and discuss. Verify and correct their answers as needed, as well as provide additional detail to ensure that all trainees have understood – and remember – the area to stun each animal.
 4. Tell trainees to review the picture again, and to commit to memory the place where each different animal needs to be hit to stun that animal correctly and without suffering.



Guided Practice Activity

1. Ask for a volunteer to read aloud the **1.3 Key Facts** from their trainee manuals.
2. Ask trainees focused questions to ensure they have understood all the information in **1.3 Key Facts**. Explain that trainees are expected to commit the facts to memory before they participate in a field visit, particularly the area on the head where animals should be stunned.
3. Give trainees about 5 minutes to work in pairs, reading the key facts aloud to one another and checking each other that they have memorized and understanding of all the details.
4. Explain that the trainees will visit the slaughterhouse in the school compound (or one nearby in the community) to observe and to assist in the stunning, sticking, and shackling of an animal. Prior to this visit, the trainees need to be prepared so the visit is valuable and helps their learning.

5. Tell trainees that as a class we will brainstorm ideas of questions and observational notes that they should consider during their up-coming field visit. Prior to the brainstorm give trainees about 3 minutes to write down all the questions that they can think of individually—then ask trainees to share their best ideas with the class. Trainer will write the questions on the board so the entire class can benefit from the good thinking from each of the individual trainees
6. Brainstorm: What should each trainee ask, observe, and note during the up-coming field visit focused on stunning, sticking, and slaughtering?

Answer: May vary but should include (at minimum) the following:

- a. Describe the slaughter zone.
 - b. Give details related to:
 - Hygiene and sanitation practices being used.
 - Safety and protective clothing being worn.
 - Restraining methods and equipment.
 - c. Explain which techniques are used for each of the three steps (stun, stick, and shackle)
 - d. List the tools that are used in each step and explain what the butcher does with each tool.
 - e. Review the purpose of stunning—and explain if you see a minimum of suffering and stress or if the process should be done better (if it should be better, explain what went wrong and how to do it better)
 - f. Other observations
7. Ask trainees to take out their copybooks and copy down the final list of guiding questions to be used during the field visit. Remind them that, as in previous units, each trainee will be responsible to complete a brief report which will be submitted to the trainer—as well as shared with the class.



Application Activity

1. Explain to the trainees that field visits are an opportunity for them to connect the school environment with the actual world of work. Tell them that it is their role to make the most out of each visit—by asking questions, observing well, and participating as actively as possible. The more they are involved, the more they will gain from this valuable opportunity.
2. You will have met with the slaughterhouse personnel prior to the visit to ensure the following:

- a. The timing of the visit is appropriate so trainees will observe the actual stunning, sticking and shackling – as well as other processes such as sanitation techniques and restraining methods.
 - b. The personnel is prepared to discuss the details of their actions and methods with the trainees to enhance the learning of the trainees.
 - c. There will be opportunities for the trainees to actively participate alongside the butchers and other personnel, that is, actually help with the processes, once trainees have observed and have learned the techniques under discussion adequately to provide safe assistance.
3. You and the trainees will all go together to the chosen slaughter house. Trainees must bring their notebooks and pens so they can take detailed notes of their observations using the guiding questions found in **Topic 1.3 Task 3**:
- a. Describe the slaughter zone. Give details related to:
 - Hygiene and sanitation practices being used.
 - Safety and protective clothing being worn.
 - Restraining methods and equipment.
 - b. Explain which techniques are used for each of the three steps (stun, stick, and shackle).
 - c. List the tools that are used in each step and explain what the butcher does with each tool.
 - d. Review the purpose of stunning—and explain if you see a minimum of suffering and stress or if the process should be done better. If it should be better, explain what went wrong and how to do it better.
 - e. Other observations? Other personal ideas that should be focused upon? Other questions?

Answer: Answers will vary, but you should read each report carefully to validate facts and methods described and to ensure that correct methods are being observed and learned.



Points to Remember

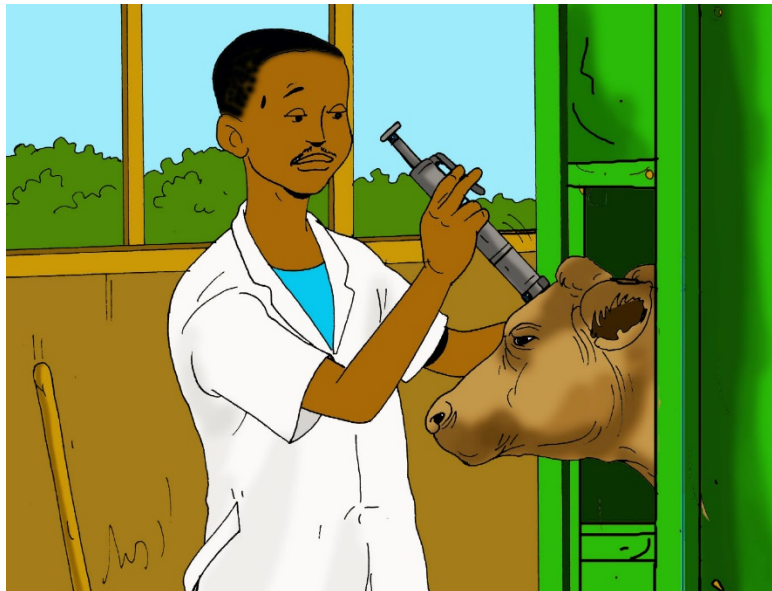
- Safety of personnel and minimal suffering of the animal are main goals during slaughter.
- Check stunning device, ensure sharp knives, and gather equipment needed for shackling PRIOR to the slaughter.
- Sanitation and hygienic practice are paramount.



Formative Assessment

Answer the following questions using complete sentences.

1. Give at least three methods of stunning an animal during slaughtering.
2. Differentiate vertical from horizontal shackling position and list the benefits for each.
3. During sticking, differentiate transverse incision from lateral stab incision.
4. Explain why the following picture is not a correct method for stunning an animal:



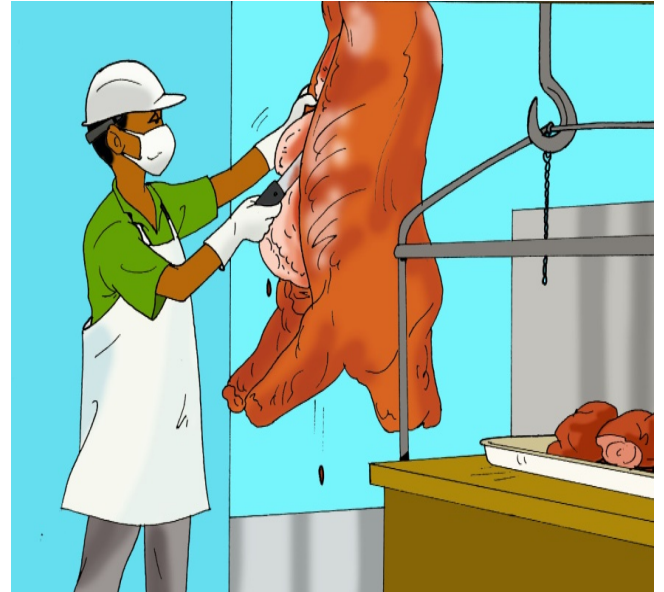
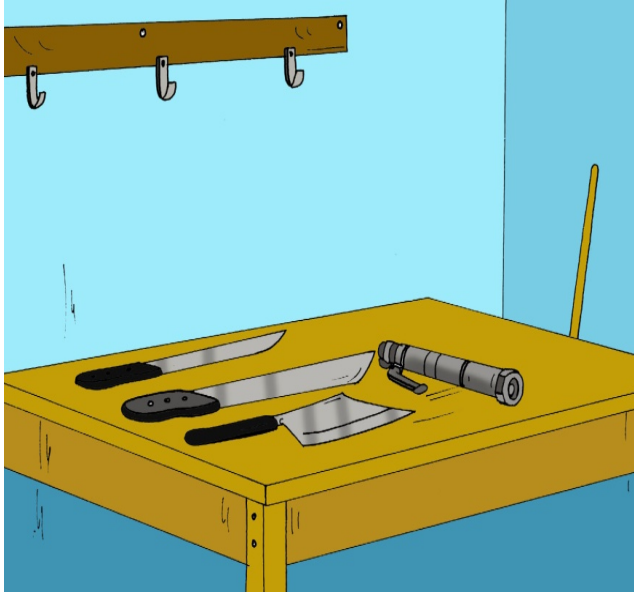
Answers:

1. Three methods of stunning
 - Striking: wooden hammer or captive bolt
 - Electrical stunning: electric current of 75-120 V for 15-70 seconds
 - Anesthetization: mixture of CO₂ air—and chloroform
2. Horizontal shackling gives faster bleeding rates and a greater recovery of blood. Vertical shackling is less hygienic, unless using easily cleaned stainless steel table, bleeding is delayed.
3. Transverse Incision of the neck is performed by a throat cut across the neck. Lateral stab incision of the neck is performed by sticking knife directly into the neck.
4. This is not correct because the cow is not being carefully restrained during stunning.

**Self-Reflection**

1. Ask trainees to re-take the self-assessment at the beginning of the unit. They should then fill in the table in the Trainee's Manual to identify their areas of strength, areas for improvement and actions to take to improve.
2. Discuss trainees' results with them. Identify any areas that are giving many trainees difficulties and plan to give additional support as needed (ex. use class time before you begin the next learning outcome to go through commonly identified difficult concepts).

Learning Unit 2: Prepare a carcass for butchering



Learning Outcomes

By the end of the Learning Unit, trainees will be able to:

- 1.1** Prepare, check, and adjust materials, tools, and equipment to cut meat
- 1.2** Skin, eviscerate, wash, and cut a carcass
- 1.3** Prepare meat cuts

Learning Unit 2 Self-Assessment

1. Ask trainees to look at the illustrations above (in their Trainee Manuals) and discuss what they see. What topics do they think this unit will include based on the illustrations? After some brainstorming, share the main topics.
2. Ask trainees to fill out the self-assessment at the beginning of the unit in their Trainee Manuals. Explain that the purpose of the self-assessment is to become familiar with the topics in the unit and for them to see what they know or do not know at the beginning. At the end of the unit, they will do a self-reflection, which will include re-taking this self- assessment to see improvements and identify strengths, areas that need improvement and actions to take. The self-assessment is not a test!

Learning Outcome 2.1: Prepare, check, and adjust materials, tools, and equipment prior to butchering

	<p>Objectives: By the end of the learning outcome, trainees will be able to:</p> <ol style="list-style-type: none"> Prepare the work area in a butcher shop Explain the preparation of equipment prior to receiving the carcass Select tools, materials, and equipment used for meat cutting
	<p>Time Required: 7 hours</p>
	<p>Learning Methodologies: Brainstorming, group discussions, watching video clips, field visit</p>
	<p>Materials Needed:</p> <ul style="list-style-type: none"> Standard training materials: Flipchart, marker pen, pens If available: Internet and reference books and video/DVD Additional materials: Goat, butchering tools and equipment, slaughtering zone, cleaning products
	<p>Preparation:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Gather tools and equipment for Getting Started Activity. <input type="checkbox"/> Prepare a field visit.
	<p>Cross Cutting Issues:</p> <ul style="list-style-type: none"> ✓ Gender: Provide equal opportunities to both boys and girls during the lesson as well as balance gender when forming groups. ✓ Peace and values education: Promote teamwork and respect for others' views and work. ✓ Inclusive education: Be sensitive to differences in learning abilities and uses a variety of activities and materials to cater to different learning styles. ✓ Environment and sustainability: Consider the environment when handling and disposing of cleaning solutions and other waste products.
	<p>Prerequisites:</p> <ul style="list-style-type: none"> ▶ Environmental hygiene, cleaning and safety procedures, and precautions ▶ Safety, Health, and Environment (SHE) Policies

Key Competencies:

Knowledge	Skills	Attitudes
1. Explain main preparation of work area	1. Prepare the work area	1. Adaptable
2. Describe tools, materials, and equipment needed	2. Select tools, materials, and equipment	2. Motivated
3. Discuss adjustment of the equipment, tools, and materials for butchering	3. Adjust, install, and test the equipment and tools needed for butchering	3. Methodical

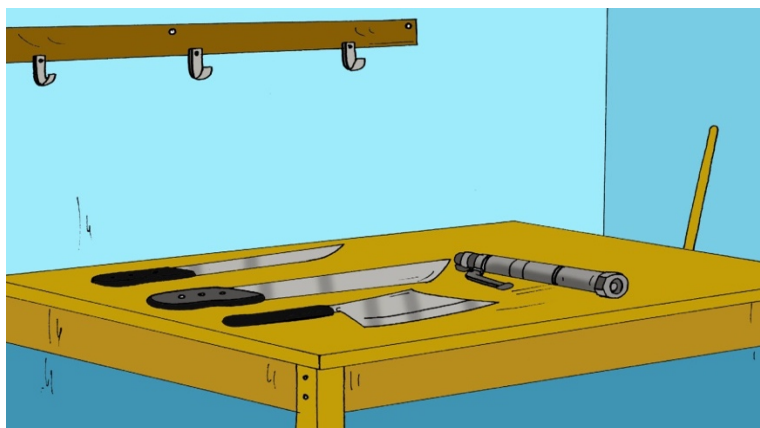


Steps:



Getting Started: What do we know and where are we going?

1. Ask trainees to turn to **Topic 2.1 Task 1** in their Trainee Manuals. Show the trainees a selection of tools used for skinning, evisceration (the removal of internal organs, especially those in the abdominal cavity), and meat cutting. List the names of all tools on the board then ask trainees to complete the task independently.



2. Trainees should each write responses to the following questions, after observing the tools.
 - a. What do you see? (give a correct name for the tool and a description of the use)
 - b. Which of these tools have you used? Which have you already seen used?

Answer: Answers will vary according to tools gathered by trainer. Explain that some tools may have more than one use and class should focus on use for butchering, in particular cutting meat

3. Ask a few volunteers to share responses. Clarify any misconceptions and note that some tools can be used in many situations (knives) but that there are special uses too. Consider that this Learning Outcome is focused on cutting meat—so consider how these tools are used in that area.
4. Introduce the learning outcome with the knowledge, skills and attitudes trainees will gain.



Problem Solving Activity

1. Trainees should form groups of 4. Within their groups they should do a quick review of the past unit then together they will think about this learning outcome and use what has already been learned to plan out steps for a preparation of site for butchering. This includes deciding which tools will be needed for a cleaning process PRIOR to butchering an animal. The teams will list out the tools and also list out the steps important for preparation of the site, as described in **Topic 2.1 Task 2** in their manuals.
2. Trainees will list out all the details they remember as important from each of the previous learning outcomes
 - a. Apply hygiene and sanitation practices according to site requirements.
 - b. Restrain animals using techniques compatible with Animal Welfare Act.
 - c. Stun animals in compliance with Animal Welfare Act.
3. Once the site is cleaned and prepared, the next step is to restrain and stun the animal. Once the animal is stunned, the next step is to slaughter the animal quickly, cleanly and correctly. Ask trainees to consider what tools and equipment they will need to do that job. They should list the tools and explain what should be done to clean each tool—and to check that it is ready for use.

Answer:

- For all potential answers review **Key Facts** from the **Unit 1** Learning Outcomes.
- The list will be very similar to the tools displayed in the **Getting Started Activity**. All tools and equipment should be scrubbed with soap and water and disinfected prior to use for slaughter. To check that each tool is ready for use, the knives, saws, and hooks should be sharpened.

4. When the groups of trainees have completed their tasks, ask for a volunteer to share the answers from that group. Other groups may have added detail to contribute.



Guided Practice Activity

1. In pairs, ask trainees to carefully read **2.1 Key Facts** in their manual. Once everyone has had time to read it independently, ask for volunteers to read each section—and stop to explain and take questions from trainees at each new section.



Application Activity

1. Organise a visit to a local slaughterhouse where the trainees will watch an animal being slaughtered. They will be asked to respond to **Topic 2.1 Task 3** while observing the operations and the personnel at work, by writing their notes in the following table:

Cleaning processes I observed:	Preparing/Checking equipment I observed:
Equipment, tools, and protective clothing that were used during the observation time:	Equipment that was available but NOT used:
Animals I watched being slaughtered:	Other relevant observations:

2. Upon return to the class, discuss observations with the trainees.



Points to Remember

- Protective clothing should be worn at all times while butchering and cutting meat.
- Correct hygiene procedures protect the butcher and consumer of the meat produced.
- All equipment and tools should be in place and cleaned prior to the butchering process.



Formative Assessment

1. Match the word to the sentence by writing the corresponding letter in answer in the space:

Word List:

- | | | | |
|-------------------|-------------------|---------------------------------------|----------|
| A. Skinning knife | B. Meat saw | C. Cleaning agents (acid or alkaline) | |
| D. Stunning pen | E. Sticking knife | F. Meat chop | G. Steel |

Sentences:








- _____ 1. Suitable for removing organic dirt, protein residues, and fat or inorganic deposits, scaling like lime, etc.
- _____ 2. Also referred to as the knocking pen.
- _____ 3. A replaceable blade handsaw used to saw through bone.
- _____ 4. A long, tapering rounded and smooth metal rod on which knives are sharpened regularly to improve keenness.

2. Explain the steps in the 3-tanks system of manual cleaning in 5-7 sentences.

Answers:

1. 1-C, 2-D, 3-B, 4-G
2. Steps are the following:
 - a. Remove soil from the equipment by scraping the surfaces.
 - b. Transfer equipment to tank no. 1 which contains a solution of water and detergent. Loosening the soil may require soaking for a longer period.
 - c. Equipment is then transferred to tank no. 2, containing a solution of water and detergent. The equipment is then scrubbed clean while in this tank.
 - d. Equipment is rinsed in clean water (from pails or running water or a hose).
 - e. Then equipment is moved to tank no. 3 containing hot water (77°C) for at least 30 seconds to have a disinfecting effect.
 - f. Equipment is then stacked to drain and dry.

Learning Outcome 2.2: Skin, eviscerate, wash, and cut a carcass

	<p>Objectives: By the end of the learning outcome, trainees will be able to:</p> <ol style="list-style-type: none"> Skin an animal Eviscerate a slaughtered animal Identify the quarters of different animals Use appropriate cutting techniques during meat cutting
	<p>Time Required: 7 hours</p>
	<p>Learning Methodologies: Brainstorming, group discussions, problem solving, practical exercise, field visit</p>
	<p>Materials Needed:</p> <ul style="list-style-type: none"> Standard training materials: Flipchart, Marker pen, Pen, Video/DVD If available: Internet and reference books Additional materials: Abattoir, animals, and restraining materials, goat Equipment including: Cleaning products, Cutters, Balance, Stainless steel tables
	<p>Preparation:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Collect tools and equipment to be used for the activities. <input type="checkbox"/> Visit local butcher to plan and prepare observational visit. <input type="checkbox"/> Buy cleaning products and protective clothing for field visit.
	<p>Cross Cutting Issues:</p> <ul style="list-style-type: none"> ✓ Gender: Provide equal opportunities to both boys and girls during the lesson as well as balance gender when forming groups. ✓ Peace and values education: Promote teamwork and respect for others' views and work. ✓ Inclusive education: Be sensitive to differences in learning abilities and uses a variety of activities and materials to cater to different learning styles. ✓ Environment and sustainability: Consider the environment when handling and disposing of cleaning solutions and other waste products.
	<p>Prerequisites:</p> <ul style="list-style-type: none"> ▶ Basic communication in the workplace

Key Competencies:

Knowledge	Skills	Attitudes
1. Explain skinning and evisceration of animal	1. Skin and eviscerate an animal	1. Accurate
2. Identify different quarters according to the animal	2. Quarter a carcass	2. Methodical
3. Describe different cutting techniques	3. Use cutting techniques to cut meats	3. Adaptable



Steps:



Getting Started: What do we know and where are we going?

1. Ask the trainees to turn to **Topic 2.2 Task 1** in their Trainee Manuals. Explain to trainees that during the last Learning Outcome they learned how to select, clean, and prepare the tools and equipment they will need to butcher animals. During this lesson they will take the next two steps which are to skin and eviscerate (remove internal organs) a carcass.
2. Ask trainees to brainstorm all that they can see in the picture below:



Answer:

Answers will vary, but be sure that trainees note the hook, the knife the collection troughs and the stainless-steel trays as well as the protective clothing being worn.

3. Introduce learning outcome and the objectives of the lesson, including the Key Competencies table.



Problem Solving Activity

1. Remind trainees that in the previous topics, we spoke about how we can minimise suffering and stress of the animal prior to slaughter. In this learning outcome, however, the animal is already dead, so we no longer need to be concerned about suffering or stress.
2. Ask the trainees to work individually to think of as many responses to **Topic 2.2 Task 2** as possible. After 3 minutes of individual work, ask trainees to pair up and to share answers with their partner. The pairs should try to think of as many more answers as possible for another 3 minutes. Then ask volunteers to share their lists with the whole class. Trainer will write all the good answers on the board to compile a list with all class thinking put in one place. The questions are as follows:
 - a. Why do we clean the site before cutting the meat?
 - b. Why must we ensure sharp knives?

Answers will vary.

3. To summarize, give your expert view on trainee responses to the questions.



Guided Practice Activity

1. Ask trainees to read **2.2 Key Facts** in pairs. Trainees should take notes and quiz each other on the information to help each other learn all the details.



Application Activity

1. The **Application Activity** for this learning outcome will be an observational visit to a local slaughterhouse while the butcher is skinning, eviscerating, and cutting meat from a carcass. You must take time in advance to carefully plan this visit, so that it is valuable to the trainees.
2. Explain to trainees that they will watch a butcher perform skinning and evisceration as well as cutting the meat of a carcass. Trainees should be observing carefully—and

should be ready to ask any questions they have as they watch the process. While on the field visit it is the trainee responsibility to take detailed notes so each trainee can write a brief report for the trainer upon completion of the field visit.

3. Ask trainees to carefully read **Topic 2.2 Task 4** in class. If directions or guiding questions are not clear, provide added detail and explanations. After the visit, trainees submit report to you. Read each report and comment on each report individually to help each student gain better knowledge and deepen understanding of the processes observed. Questions are as follows:
 - a. Describe cleaning tools, products, and processes were observed.
 - b. Explain how safety and hygiene conditions were maintained during your observation?
 - c. Describe tools and equipment used during skinning.
 - d. Describe tools and equipment used during evisceration.
 - e. Which skinning technique was used? Describe it.
 - f. Was halving and quartering done? Why did they do that?
 - g. What sort of meat chopping was done? Describe the process.
 - h. Give other observations or commentary.

Answer: Reports will vary.

4. To ensure clear understanding by each one of the trainees, trainer must take time to read and comment on each individual report in a timely manner.



Points to Remember

- Ensure correct sanitation and hygiene as well as protective clothing.
- Use sharp cutting tools when cutting a carcass to avoid spoiling meat cuts.



Formative Assessment








Answer the following open questions in 3-5 complete sentences.

1. Skinning techniques of an animal include hoist skinning and horizontal skinning. Explain the difference between those techniques.
2. Briefly, explain how hoist skinning is performed.
3. Briefly, explain the evisceration techniques.
4. Differentiate halving from quartering during cutting operations.
5. Is meat mincing the same as meat chopping? Explain your answer.

Answer:

1. **Hoist skinning:** the animal body is hoisted into hanging position, skinning starts at the back of the free hind leg and to drop the skin off, a cut is made around the tail.
Horizontal skinning: the animal is placed on its back on a flat raised surface cuts are first made, and fisting begins at the forelegs AND ends at the hind legs.
2. Start by skinning the unsuspended leg and removing the skin. Cut off the foot and hang on hook to suspend the leg. First, an opening is made in the front legs, cutting toward the jaw and continuing over the brisket to the naval. To drop the skin off, a cut is made around the tail
3. Cut the rectum and free it completely for opening. Cut the breastbone along the middle to the udder. Push the stomach and intestine out of the middle opening. Cut the diaphragm and remove the contents of chest cavity
4. Halving is a cut that is made through the centre of backbone to obtain two equal sides. Quartering is the extra division of each side of beef between the twelfth and thirteenth ribs into fore-and hindquarters
5. No, because mincing is performed by using meat grinder/mincer while chopping is performed by using sharp knives.

Learning Outcome 2.3: Prepare meat cuts

	<p>Objectives: By the end of the learning outcome, trainees will be able to:</p> <ol style="list-style-type: none"> Explain meat deboning and cutting techniques during meat cutting Explain meat trimming techniques used in meat cutting operation Describe the storage of meat cuts after butchering
	<p>Time Required: 6 hours</p>
	<p>Learning Methodology: Group work, discussions, brainstorming, observations, demonstration in class, field visit</p>
	<p>Materials Needed:</p> <ul style="list-style-type: none"> Standard training materials: Flip chart, marker pen, pens If available: Internet and reference books To bring to the butcher: Carcass of pig or goat Butcher tools: mincers, choppers, trays, knives, chopping boards, sharpeners stainless steel tables, plates, and containers, hot water, sterilizer, pH-meter, balance (electric, mechanical), thermometer
	<p>Preparation:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Prepare visit with butcher shop in advance so it is useful to trainees. <input type="checkbox"/> Gather cutting tools and other equipment for demonstration. <input type="checkbox"/> Request meat carcass from butcher (or school) for demonstration.
	<p>Cross Cutting Issues:</p> <ul style="list-style-type: none"> ✓ Gender: Provide equal opportunities to both boys and girls during the lesson as well as balance gender when forming groups. ✓ Peace and values education: Promote teamwork and respect for others' views and work. ✓ Inclusive education: Be sensitive to differences in learning abilities and uses a variety of activities and materials to cater to different learning styles. ✓ Environment and sustainability: Consider the environment when handling and disposing of cleaning solutions and other waste products.
	<p>Prerequisites:</p> <ul style="list-style-type: none"> ▶ Animal physiology (muscles and tissues)

Key Competencies:

Knowledge	Skills	Attitudes
1. Explain main principles of meat deboning	1. Conduct meat deboning	1. Honest
2. Explain meat trimming techniques	2. Conduct meat trimming	2. Accurate
3. Explain best practice for storage of meat cuts	3. Adjust storage condition for meat cuts	3. Committed



Steps:



Getting Started: What do we know and where are we going?

1. Ask trainees to turn to **Topic 2.3 Task 1** in their Trainee Manuals. Display the illustration from the trainee manual showing meat cutting operations in a butcher house. Ask trainees to describe what they see with a partner.



2. Tell trainees to discuss the following questions with their partner:
 - a. What do you see happening in the illustration?
 - b. List all the tools that are being used in the illustration.
 - c. Describe the protective and hygienic clothing being worn and give reasons for each piece.

Answers:

- a. Two women are working together to cut meat into products to be sold.

- b. The women are using a chopping block table, a meat cleaver, and a bowl.
 - c. The women are wearing either a hat or a hair net (so hair doesn't get into the food), apron or protective coat (to keep themselves clean), gloves and face mask (so germs from the people are not transferred to the meat cuts).
- 3. Ask a few volunteers to share responses and discuss. Clarify any misconceptions about the image.
- 4. Introduce the learning outcome with the knowledge, skills, and attitudes trainees will gain.



Problem Solving Activity

1. Divide trainees into 5 groups and refer them to **Topic 2.3 Task 2** in their manuals. Tell each group to research one of the following topics on the internet or with other resources available in the class or school:
 - a. Meat deboning
 - b. Meat trimming
 - c. Meat mincing
 - d. Meat storage
 - e. Meat grading
2. After each group has found information on their topic, the groups will present details to the class.
Answer: Answers will vary. Refer to **2.3 Key Facts** for details on each topic.
3. After 30 minutes for the research, ask each group to present their findings to the class. As each group shares out their research, other trainees should be encouraged to ask questions and to take notes because all trainees will be responsible for knowing each group's contribution.
4. After all presentations, trainer should provide expert view on all the topics to ensure a common understanding and to review the details from the trainee research.



Guided Practice Activity

1. Ask trainees to read **2.3 Key Facts** individually, section by section. After each section, stop and review the information together. Respond to any trainee questions, provide examples, and add detail.

2. After discussing all sections in **2.3 Key Facts**, explain that a local expert (invited into the class) will demonstrate meat cutting using an actual carcass. Trainees will observe and taking careful notes.
3. **NOTE:** This must be prepared in advance to ensure that a carcass is available, washing and sanitation supplies and tools are in place, and that there is a proper zone for the trainer (or expert invited into the class) to cut meat.
4. In preparation for this demonstration be sure that the trainer (or expert) is prepared to explain and describe EVERY action that is taken so the trainees are hearing the logic behind what is being done as well as watching how to do it in person. The trainer should be prepared with detailed talking points and expert tips for each step that is done. Trainees will add their notes in the chart below.

Sanitation and Hygiene details	Tool preparation and cleaning of area	Deboning and cutting carcass	Trimming and grading of meat cuts

5. After the demonstration, ask trainees to review their notes at home and to return to class with any questions that they may have and to be prepared to describe (in detail) all the processes that they saw. Upon returning to class, gather all questions on small pieces of paper then let trainees exchange the papers and see if they can answer each other's questions. If not, clarify for them.



Application Activity

1. Let one trainee describe the demonstration that they saw during the **Guided Practice Activity (Topic 2.3 Task 3)**, then explain that they will now watch the same process in a real butcher shop in the community. Explain that this will be different because the butcher is preparing the meat for sale and will work quickly so they will need to be very careful with their observations.
2. Ask trainees to work in pairs to prepare the following guided questions from **Topic 2.3 Task 4** that they will focus upon during the field visit.
 - a. How is the butchering/meat cutting area prepared prior to the arrival of the carcass?
 - Do those preparations result in a sanitary zone?

- If NOT, give suggestions that should be done to better sanitize the zone prior to cutting.
- b. What tools are used?
 - Did you see the knives being sharpened immediately prior to cutting and trimming?
- c. What protective gear is worn by the butcher?
 - Is this adequate? Can you suggest better/more/other gear that would be helpful?
- d. Describe the de-boning process in detail
 - Do you think that you could de-bone as efficiently as the butcher?
- e. Describe the trimming technique used
 - What is done with the bits that are trimmed off the meat?
- f. Explain how the butcher cuts the meat after trimming
 - Why does the butcher cut some pieces small and leave others big?
- g. Assign a grade for the different cuts of meat you see being cut. Explain why you give each grade.
- h. How does the butcher store the meat after cutting?
 - Can you suggest improvements?
- i. With your partner add three other questions here.

Answer will vary. Review each report individually and provide feedback.

3. After trainees have written their additional questions, ask some volunteers to share the additional questions in case others would like to ask those same questions.
4. As a class, proceed to the field visit site. Class will remain at butcher for as long as the process takes and to ensure that trainees are able to ask all their questions as they observe.
5. After the visit, allow trainees time to re-write and review their notes then the trainees will submit their reports to trainer. Read and comment on all reports individually and identify 3 or 4 reports among all that are submitted to be read aloud to the class.



Points to Remember

- Wear clean and sanitary clothing as well as protective gear during meat cutting activities.
- Use sharp cutting tools and be careful during the cutting process.



Formative Assessment

Select the correct answer for each question.

Answers are in bold.

1. Which of the following is among general beef deboning tips?
 - a. Place the meat in the centre of cutting board
 - b. Find the first bone with the non-cutting hand & grip it securely
 - c. Remove the bone
 - d. None is correct
 - e. **All above are correct**
2. Deboning lamb leg requires the following actions:
 - a. Slicing into the bone until the bone has been separated into two pieces
 - b. **Removing the bone**
 - c. slicing away any pieces of fat
 - d. All are correct
 - e. None is correct
3. Meat trimming is done by setting the cut of meat on a cutting board then pinching off a small tag of the fat toward the top to slip the knife between the fat and the flesh.
 - a. **True**
 - b. False
4. Meat mincing refers to removing gristle, fat, bones, skin and connective tissue from the meat with a sharp knife.
 - a. True
 - b. **False:** That is a description of trimming, not mincing.



Self-Reflection

1. Ask trainees to re-take the self-assessment from the beginning of the unit. After the assessment, trainees should fill in the table in the Trainee's Manual to identify their areas of strength, areas for improvement, and actions to take to improve.
2. Discuss trainees' results with each trainee individually. If you find areas that give many trainees difficulty, plan to give additional support as needed (use class time for reviews, more examples, and additional problem sets before you begin the next learning outcome).

Learning Unit 3: Make meat products



Learning Outcomes








By the end of the Learning Unit, trainees will be able to:

- 3.1** Prepare ingredients for meat products
- 3.2** Grind mixtures for meat products
- 3.3** Assist in making meat products
- 3.4** Store meat products

Learning Unit 3 Self-Assessment

1. Ask trainees to look at the illustrations above (in their Trainee Manuals) and discuss what they see. What topics do they think this unit will include based on the illustrations? After some brainstorming, share the main topics.
2. Ask trainees to fill out the self-assessment at the beginning of the unit in their Trainee Manuals. Explain that the purpose of the self-assessment is to become familiar with the topics in the unit and for them to see what they know or do not know at the beginning. At the end of the unit, they will do a self-reflection, which will include re-taking this self- assessment to see improvements and identify strengths, areas that need improvement and actions to take. The self-assessment is not a test!

Learning Outcome 3.1: Prepare ingredients for meat products

	<p>Objectives: By the end of the learning outcome, trainees will be able to:</p> <ol style="list-style-type: none"> Distinguish different types of ingredients used in meat processing Weigh, mix, and dose ingredients used in meat processing
	<p>Time Required: 5 hours</p>
	<p>Learning Methodologies: Brainstorming, discussions, individual and group work, practicum, field visits</p>
	<p>Materials Needed:</p> <ul style="list-style-type: none"> Standard materials: flipcharts, makers, pens Internet and reference books Spices: muscade, magis, garlic powder, white and black pepper, salt, cardamom, phosphate, curing agent, chili/paprika powder, pepper, (etc.) Additional materials: Meat products along with recipes that were used to make the products, mixer, grinders, containers
	<p>Preparation:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Gather all non-meat ingredients (spices, etc.) and equipment and tools. <input type="checkbox"/> Ensure hygiene and sanitation tools and processes are in place. <input type="checkbox"/> Send the meat requisition and ensure meat is in place for class. <input type="checkbox"/> Prepare field visits.
	<p>Cross Cutting Issues:</p> <ul style="list-style-type: none"> ✓ Gender: Provide equal opportunities to both boys and girls during the lesson as well as balance gender when forming groups ✓ Peace/value education: Promote teamwork and respect for others' views and work. ✓ Inclusive education: Be sensitive to differences in learning abilities and uses a variety of activities and materials to cater to different learning styles. ✓ Environment and sustainability: Consider the environment when handling and disposing of cleaning solutions and other waste products.
	<p>Prerequisites:</p> <ul style="list-style-type: none"> ▶ Food additives and spices in meat products ▶ Balance adjustments and use of other tools

Key Competencies:

Knowledge	Skills	Attitudes
1. Describe different meat ingredients	1. Select all meat ingredients	1. Patience
2. Explain how to weigh, mix, and dose ingredients	2. Perform weighing, mixing, and dosage of ingredients	2. Accuracy



Steps:

🔄 Getting Started: What do we know and where are we going?

1. Ask trainees to turn to **Topic 3.1 Task 1** in their Trainee Manuals. Display a few different ingredients used in recipes for meat products (or have trainees look at the illustration under **Task 1** in their manuals).



2. Ask trainees to work in pairs to brainstorm which meat products each of the ingredients shown might be used for, and list them in the chart.

Name of the ingredient	Meat products that use this ingredient
Write as many ingredients as you can identify here	For each ingredient, list out as many meat products as possible

Answers will vary depending on ingredients available. Refer to **3.1 Key Facts** for some details, but also supply the other details based on what is available to show trainees.

- Go around the class to let all trainees participate in sharing the names of ingredients and the different meat products where those ingredients are found.
- Introduce the objectives of the learning outcome including knowledge, skills, and attitude.



Problem Solving Activity

- Divide trainees into groups of 4 and refer them to **Topic 3.1 Task 2** in their Trainee Manuals. Within each group, 2 group members will read the first section, and 2 group members will read the second section of **3.1 Key Facts**. Then the pairs will do some quick research on their topics before coming together to 'teach' their section to the other trainees in their group.
- Each pair will read their section of **3.1 Key Facts** carefully and quiz each other to ensure clear understanding. Then the pair will take approximately 15-30 minutes to do additional internet research on their topic to complete their base of knowledge.
- After the research is complete the pairs will join back into a single group of 4 trainees and each will report back their learning, thus teaching all members of the group the foundational knowledge that has been learned through the key facts.

Answers will vary, but you and trainees should refer to **3.1 Key Facts** as a foundation.

- Following the group work, gather the class as a whole and test general knowledge by asking a few key questions and allow trainees to shout out answers. Guiding questions may include:
 - What are the two kinds of curing called? Explain the difference.
Answer: Dry and wet

- b. What are two reasons that curing meat is an advantage?

Answer: Tenderize and add flavour

- c. Give two examples of spices used in meat products.

Answer: Many correct answers



Guided Practice Activity

1. Bring a variety of meat products along with the ingredients that were used to make the meat products to the classroom and the written recipes for the meat products.
2. One by one, trainer will show each meat product, the ingredients, and the recipes that were used to prepare the meat products. Explain each product and the recipe carefully and taking all questions from trainees.
3. Tell trainees to do the following:
 - a. Identify the various ingredients in each meat product.
 - b. Weigh or measure out the quantities identified in each recipe.
 - c. Determine how to mix the ingredients together and how the additives should be combined with the meat produced (chopped together, minced together, simply stirred, soaked in a broth, etc).
 - d. Explain how the final meat product is completed then cooked.
4. Ask trainees to apply washing and sanitization practices on the workplace and equipment in the classroom. Trainees should choose the appropriate cleaning product and equipment to be used during cleaning process, then clean the workstation in preparation for mixing meat products.
5. After cleaning and selecting the tools and equipment, ask groups of trainees to gather ingredients to prepare the meat products that have been displayed with their raw ingredients.
6. Trainees (in groups) will be expected to weigh and mix ingredients according to recipes provided by the trainer. The groups will then combine the additives with the meat in accordance with the recipe to complete their group's meat product. When meat product is completed trainees should clean their stations completely and correctly and return unused ingredients to the trainer.

7. During this practical exercise, provide support to all groups by moving from one group to the next, answering questions, providing hints and guidance, and ensuring correct processes.
8. Upon completion of this practical activity, discuss the processes and share lessons learned.



Application Activity

1. Ask trainees to go in pairs to a local butcher shop in their community. Discuss with the butcher to understand which meat products the butcher prepares and observe the preparation of those products, if possible. While at the butcher shop, each trainee should write out (in fine detail) two recipes that are used by the local butcher.
2. When trainees return to class ask trainees to share the recipes that they have gathered with a new partner. The partner should look at the recipe and determine if there is enough detail so they can make the same product accurately. If not, identify where more information is needed, and ask the writer to add more detail. When the recipes are complete enough to make the product then share with trainer to confirm the recipe is good and complete.
3. Trainer will choose 3 or 4 trainees to write their recipes on the board. Classmates will ask clarifying questions and provide suggestions to ensure the recipes are well done and could be followed to make the expected product.



Points to Remember

- Quality of ingredients will impact the quality of the final meat product so use good additives.
- Measure additives carefully according to recipes to ensure correct flavour and quality.



Formative Assessment








Complete the following short answer questions using 2-3 complete sentences.

1. Describe the process for wet-curing (or brining) meat.
2. Give two reasons why a person might want to cure meat.
3. List 5 different meat additives.

Answers:

1. Make a brine broth of salt, sugar, spices and water. When the brine is chilled, put meat in the brine and let it sit in the refrigerator for up to 6 days. Drain meat and let sit for another day then rinse and cook.
2. Curing meat adds flavour and makes meat more tender.
3. Many correct answers—refer to **3.1 Key Facts**.

Learning Outcome 3.2: Grinding meat mixtures

	Objectives: By the end of the learning outcome, trainees will be able to: <ol style="list-style-type: none"> Describe size requirements of ground mixture according to the product Perform grinding and mixing techniques during meat processing
	Time Required: 5 hours
	Learning Methodology: Discussions, group work, individual work, brainstorming, demonstrations, individual field visits
	Materials Needed: <ul style="list-style-type: none"> Standard training materials: Flip chart, markers, pens, reference books, computers and Internet Additional materials: Grinder, containers, balance (electric, normal), meat and spices
	Preparation: <ul style="list-style-type: none"> <input type="checkbox"/> Gather all materials and ingredients that will be used from the market. <input type="checkbox"/> Confirm that the workshop is available.
	Cross Cutting Issues: <ul style="list-style-type: none"> ✓ Gender: Provide equal opportunities to both boys and girls during the lesson as well as balance gender when forming groups. ✓ Peace and values education: Promote teamwork and respect for others' views and work. ✓ Inclusive education: Be sensitive to differences in learning abilities and uses a variety of activities and materials to cater to different learning styles. ✓ Environment and sustainability: Consider the environment when handling and disposing of cleaning solutions and other waste products.
	Prerequisites: <ul style="list-style-type: none"> ▶ Grinding machine installation

Key Competencies:

Knowledge	Skills	Attitudes
1. Discuss size of different meat products	1. Change grinder fittings to adapt textures of meat products	1. Methodical
2. Discuss mixing techniques used in meat processing	2. Apply mixing techniques	2. Attention to detail



Steps:



Getting Started: What do we know and where are we going?

1. Show the class a hand-crank grinder and refer them to **Topic 3.2 Task 1** in their manuals.
 - a. Ask how many trainees have used such grinders in their experience.
 - b. Ask a trainee to explain how it is used and why.
 - c. Discuss what can be ground in such a machine.

Possible Answers: Meat, peanuts, leaves for sauces, etc.

2. Explain that in this learning outcome, we will be discussing the use of such grinders in the preparation of meat products.
3. Introduce the learning outcome and the type of knowledge, skills, and attitudes trainees will gain.



Problem Solving Activity

1. Gather trainees into groups of 4 or 5. Give each group one manual crank meat grinder.
2. Each group will take apart, sketch, then re-assemble the meat grinder according to **Topic 3.2 Task 2**. This activity will take approximately 20 minutes. You will need to walk around the class to support, answer questions, and confirm that the groups have completed the process accurately.



3

3. Trainees will sketch each grinder part that is on the table in their notebook. Then they will use the diagram above to label each part.
4. When every group member has completed their sketch, they will work together to re-assemble the meat grinder. Confirm their assembly is complete and correct.

Answer: Sketches will look similar to diagram above. Trainer will confirm dis- and re-assembly.

5. When all groups have completed the assembly, brainstorm as a class: Why is it important to know how to take apart and re-assemble grinders?

Answers vary but must include: Grinders can be cleaned before and after each use, and so grinders can be fixed or maintained to sharpen blades and ensure freely moving parts are good.



Guided Practice Activity

1. Discuss the difference between chopping and grinding meat. Note that the texture is rougher if chopped and finer if ground. Explain that when grinding meat, if the grind plate has small holes, the result will be finer textured meat. If the grind plate has big holes, we get rougher textures.
2. Now, brainstorm, as a class, the following questions:

³ OpenClipart-Vectors. (n.d.). *Mincer Meat Grinder Grinder Free Photo* [Drawing]. Need Pix. <https://www.needpix.com/photo/89034/mincer-meat-grinder-grinder-mincing-machine-kitchen-household-cooking>

- a. When is it best to chop meat?
- b. When is it best to grind roughly?
- c. When is it best to grind finely?

Answers:

- a. Chop is for stews
- b. Ground is for making patties or loaf meat
- c. Fine ground is for baby food

3. Read aloud the **3.2 Key Facts**. Stop after each section to take questions and add additional information or examples as needed.
4. Demonstrate how to take apart an electric grinder, showing the parts illustrated in **3.2 Key Facts**. Explain how to change the settings to change texture of meat produced, to clean, and to sanitize the machine. Answer questions as trainees observe the process.



Application Activity

1. Tell trainees that this activity will be an individual, out of class, activity. **Topic 3.2 Task 4** involves visiting at least 2 butcher shops in the community. While at the butcher shop, trainees will observe the grinder being used and will ask the butcher questions about different chopping and grinding techniques, including which settings work well and what consumers prefer.

Name and Location of Butcher #1:	Name and Location of Butcher #2:
Describe grinding machine:	Describe grinding machine:
What size /texture does this butcher make? Explain why?	What size /texture does this butcher make? Explain why?
How does the butcher clean this machine?	How does the butcher clean this machine?
What does the butcher sell most—Ground meat or chopped meat? Why?	What does the butcher sell most—Ground meat or chopped meat? Why?
Other observations:	Other observations:

2. Upon return to class, ask trainees to share their observations and experiences.



Points to Remember

- Always wear protective clothing when using the machines.
- Unplug and fully sanitize the machine after every grinding session.










Formative Assessment

Answer the following questions with 3 or more complete sentences.

1. Explain reasons to either chop or grind meat.
2. Describe how to use the manual hand-crank grinder to chop meat.

Answers: Answers will vary –refer to **3.2 Key Facts**.

Learning Outcome 3.3: Make meat products (sausage)

	<p>Objectives: By the end of the learning outcome, trainees will be able to:</p> <ol style="list-style-type: none"> Perform casing preparation for sausage making Describe the different types of sausages Conduct quality checks on sausages
	<p>Time Required: 15 hours</p>
	<p>Learning Methodologies: Brainstorming, group work, practical exercise</p>
	<p>Materials Needed:</p> <ul style="list-style-type: none"> Standard materials: Flip chart, markers, pens, internet, reference books, computers Equipment: Stuffer, Balance, Hanging racks, trays, grinder Additional materials: Meat, other sausage ingredients, casings (natural or artificial)
	<p>Preparation:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Gather materials including sausage casings, meat, and spices. <input type="checkbox"/> Obtain stuffing machine and grinder. <input type="checkbox"/> Prepare copies of the recipe for each trainee before the class time. <input type="checkbox"/> Visit local butchers so they are prepared for when the trainees will visit with questions regarding preparation of sausages.
	<p>Cross Cutting Issues:</p> <ul style="list-style-type: none"> ▶ Gender: Provide equal opportunities to both boys and girls during the lesson as well as balance gender when forming groups. ▶ Peace and values education: Promote teamwork and respect for others' views and work. ▶ Inclusive education: Be sensitive to differences in learning abilities and uses a variety of activities and materials to cater to different learning styles. ▶ Environment and sustainability: Consider the environment when handling and disposing of cleaning solutions and other waste products.
	<p>Prerequisites:</p> <ul style="list-style-type: none"> ▶ Different ways of heat transmission during cooking

Key Competencies:

Knowledge	Skills	Attitudes
1. Explain the principle of casing preparation	1. Prepare casing	1. Methodical
2. Describe different types of sausages	2. Make sausage	2. Honest
3. Explain main principles of quality check for sausages	3. Test the sausage	3. Attention to detail



Steps:



Getting Started: What do we know and where are we going?

1. Ask trainees to turn to **Topic 3.3 Task 1** in their manuals. Display the illustration showing the making of sausages. Tell trainees to describe what they see with a partner.



2. Have the trainees write out responses to the following questions:
 - a. What are the two butchers making?
 - b. Are the two people doing the same things? If no, explain what each is doing.
 - c. What tools do you see in the illustration?
 - d. Why is it important to wear hygienic clothing?

Answers:

- a. They are making sausages.
- b. No. One is filling the sausage casing with meat, the other is tying off the individual sausages.

- c. hanging rack, tray/bowl, knife, stainless steel topped table, rope, and hairnets, gloves, coats.
 - d. When preparing food, good sanitation and hygiene reduces risk of germs/dirt/illness.
3. Ask volunteers to share responses and discuss. Clarify any misconceptions about the image.
 4. Introduce the learning outcome with the knowledge, skills, and attitudes trainees will gain.



Problem Solving Activity

1. Ask trainees to share with the class what they know about making sausages. Guide the discussion to ensure that all trainees have understood that sausages are one of the meat products that butchers make and that it is the focus of this unit, and that although the products look similar there are many different types of sausages (ingredients can vary, length and diameter can vary, cooking methods can vary, etc.) they share the general characteristics that they are made from meat and that they are in the form of a tube.
2. Ask each trainee to read individually **3.3 Key Facts** in their manual. When all trainees have finished reading, trainer should ask questions of the class to confirm sound understanding. Questions asked aloud by trainer may include the following:
 - a. Describe a sausage.
 - b. What is a casing?
 - c. What does “linking the sausage” mean?
 - d. List ingredients other than meat that may go into a sausage.
 - e. Explain the difference between a smoked and a dried sausage.
 - f. What should be reviewed during a quality check for a sausage?
 - g. Other questions.
3. Trainees should all share responses aloud as the questions are being asked and can confirm the answers by reviewing the **3.3 Key Facts**.



Guided Practice Activity

1. Pass out copies of a recipe to each trainee. The recipe should be chosen to make sausages that are culturally common in the area—and one where all the ingredients are easily available. Prepare for this demonstration lesson by having all the ingredients on

hand in addition to a grinder and a sausage stuffing machine (or a funnel to do so by hand).

2. Trainees will gather around the trainer who will demonstrate correct sausage making technique. Be sure to:
 - a. focus first on sanitation of the workstation.
 - b. weigh and mix meat and other ingredients then grind them all together.
 - c. carefully stuff prepared sausage meat into the casings using machine or funnel.
 - d. demonstrate linking the sausage so each link is a consistent size.
 - e. complete demonstration by discussing options for storage of raw sausages to be cooked later, process for smoking the sausages so they can be stored easily, and processes for drying the sausages to preserve them.
3. During demonstration, explain each step in detail, respond to questions, and ensure that all trainees are actively observing and possibly helping, if appropriate. Trainees will take detailed notes.



Application Activity

1. Trainees will each visit butcher shops in their communities and ask the butchers to recite the ingredients that are used when that butcher makes sausages. Trainees should observe the butcher making the sausages if possible. If not possible, they can ask the butcher to explain the steps that she/he follows when making sausages. Tell the trainees to write down each step.
2. This task will be done outside of class-time but prepare the trainees during class time to ensure that their independent visits are valuable and do not waste time or bother the butcher needlessly. Ask trainees to read through the task individually and then respond to concerns and questions and provide additional guidance, if needed.
3. For each of the two visits, trainees will write down both:
 - a. The recipe ingredients, including quantities/weights of each thing added to the mix.
 - b. All the steps in the process of making the sausages.
4. When the trainees return to class, tell them to compare the two recipes and processes with those that another trainee observed at different butcher shops.
 - a. How are both recipes/processes the same?
 - b. How do the recipes/processes differ? And which seems to be a better idea?

Answers will vary—Review responses from every trainee to ensure that the recipes are realistic and complete.



Points to Remember

- Sanitation is vital when processing meats.
- Sausages combine many ingredients so prepare everything needed before beginning.



Formative Assessment

Answer the following open questions using complete sentences.

1. Define the term sausage.
2. Differentiate natural casing from artificial casing.
3. Explain the purpose of smoking sausage.
4. Why must we sometimes cook sausages? Name 3 cooking techniques for sausages.
5. List the 5 areas that should be checked when evaluating the quality of a sausage.

Answers:

1. Sausage is a cylindrical meat product usually made from ground meat, often pork, beef, or veal, along with salt, spices and other flavourings, and breadcrumbs, encased by a skin.
2. Natural casing is made from animal intestines. Artificial casing is made from cellulose, collagen, plastic or other materials
3. The purpose of smoking is to improve flavour and inhibit bacterial development, as well as to enhance flavours.
4. Sausage meats are sometimes raw—so must be cooked so they are safe to eat. Sausages may be grilled, fried, boiled, or baked
5. Quality characteristic of sausage include:
 - Appearance
 - Flavour/Odour
 - Acidity
 - Moisture content
 - Storage/handling

Learning Outcome 3.4: Pack and store meat products

	<p>Objectives: By the end of the learning outcome, trainees will be able to:</p> <ol style="list-style-type: none"> Describe different packaging techniques for meat products Check packaging materials for quality Use detailed labelling techniques on meat packaging materials Maintain correct storage conditions for meat products
	<p>Time Required: 5 hours</p>
	<p>Learning Methodology: Discussions, small group work, field visit, individual work, practice exercise</p>
	<p>Materials Needed:</p> <ul style="list-style-type: none"> Storage materials: Containers, wrapper, aluminium foil, biodegradable plastic bags, labels, sealer, hygrometer, refrigerator, deep freezer, storage chambers
	<p>Preparation:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Gather packaging materials and products to be packaged. <input type="checkbox"/> Obtain packaging machines, sealers, and storage equipment.
	<p>Cross Cutting Issues:</p> <ul style="list-style-type: none"> ✓ Gender: Provide equal opportunities to both boys and girls during the lesson as well as balance gender when forming groups. ✓ Peace and values education: Promote teamwork and respect for others' views and work. ✓ Inclusive education: Be sensitive to differences in learning abilities and uses a variety of activities and materials to cater to different learning styles. ✓ Environment and sustainability: Consider the environment when handling and disposing of cleaning solutions and other waste products.
	<p>Prerequisites:</p> <ul style="list-style-type: none"> ▶ SHE Policies

Key Competencies:

Knowledge	Skills	Attitudes
1. Explain principles for packaging	1. Perform packaging	1. Honest
2. Describe packaging material quality parameters	2. Select appropriate packaging materials	2. Self-motivated
3. Explain principle on labelling techniques	3. Perform labelling	3. Committed
4. Explain principle on storage conditions and monitoring	4. Maintain conditions for meat product storage	4. Accurate



Steps:



Getting Started: What do we know and where are we going?

1. Bring in 6-8 examples of different packaging materials for meat products. Put these products on a table in the middle of the room. Ask trainees to turn to **Topic 3.4 Task 1** in their Trainee Manuals.
2. Ask trainees to describe what they see to a partner and consider how best to use each of the products to store meat well. They should work together to fill out the chart below.

Name of the packing material:	Description of the material:	Explain why this is good to store meat products:

3. When all trainees have completed their tables, ask them to share their responses with the rest of the class.

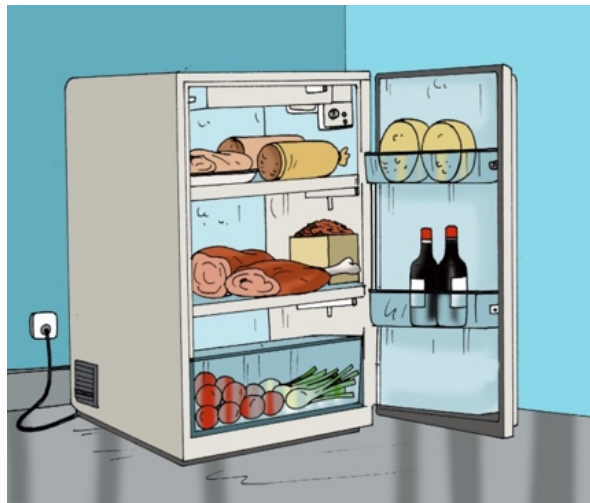
Answers will vary depending on the packing materials that trainer brings—refer to **3.4 Key Facts** for details and descriptions.

4. Ask a few volunteers to share responses and discuss. Clarify any misconceptions.
5. Introduce the learning outcome with the knowledge, skills, and attitudes they will gain.



Problem Solving Activity

1. Ask trainees to pair up to review the illustrations in **Topic 3.4 Task 2**.
 - a. Patty paper
 - b. Poly/Plastic bags
 - c. Refrigerator



2. With their partners, tell trainees to discuss the following questions:
 - a. What is similar about all three of these storage methods?
 - b. How is each method different from the others?
 - c. Explain how each method has a purpose in protecting and/or preserving meat.

Answers:

- a. All are ways that keep meat and meat products clean and fresh. All ways are good but they all still need to be done carefully. All are ways to reduce the risk of making people sick from eating spoiled or dirty meat products.
- b. Papers do not completely cover meat products, only separate and allow for stacking. Plastic completely covers products, and air can be eliminated (anaerobic) which lets meat stay good longer, and bags can be fully sealed refrigerators provide protection

to the meat by keeping it at a low temp. Patty papers keep meat products separated neatly and clean, Bags ensure that dirt and other outside things don't contaminate the meat products, Refrigerator minimises spoilage.

3. When pairs have completed the responses, ask for a few volunteers to share answers. Ensure the validity of all responses and provide additional examples and details to ensure all is clear.
4. Ask a trainee to read **3.4 Key Facts** in their manual aloud to the class.



Guided Practice Activity

1. Using the packaging materials that were gathered for the **Getting Started Activity**. Demonstrate correct use of each of the different materials for the trainees. You may use something other than actual meat products for the demo—for example rocks could be wrapped and labelled so the meat is not wasted given that this lesson is about packing and storing—not about the meat cuts themselves)
2. Ensure that:
 - a. Sanitation practices and correct hygiene are demonstrated with each packaging material.
 - b. All equipment needed (bag sealers, scales, knives, scissors) is in place at demo.
 - c. Each package is correctly and completely labelled.
 - d. With each packaging type, explain how that package should be stored too.
3. While you are demonstrating packaging, labelling, and discussing storage for each different packaging product, the trainees should be asking questions to ensure understanding.
4. With extra packing material the trainees should be encouraged to practice the wrapping and bagging techniques that have been demonstrated.



Application Activity

1. The next task will be a contest. Trainees will go into their communities, shops, grocers, butchers, etc. to find as many different ways that meat is packaged and stored as possible. Tell the class that the trainee who finds the most different meat package/store techniques will win a prize.

2. Trainees will work on **Topic 3.4 Task 4** independently after class. The competition will be complete at the start of the next class session at which time trainees will submit their lists to the trainer who will review all lists and determine the winner.

Describe the packaging	Describe the label	Describe storage technique

3. When trainees have submitted their lists, ask a few volunteers to share their findings and tell about their experiences finding all the different packages and storage techniques. Validate correct responses and ensure that all trainees have an opportunity to share their ideas.



Points to Remember

- Careful packaging and storage of meat and meat products guards quality of the product.
- Sanitation procedures must be adhered to at all times, from cutting to storing meat.



Formative Assessment

Answer the following questions using complete sentences.

1. Give at least two types of packaging materials for meat products.
2. List two reasons it is important to package meat products carefully.
3. List 4 items that should be included on a product label.
4. Which storage condition is most desirable for meat products?

Answers:

1. Types of packaging materials: Patty paper, poly Bags, deli paper, shrink wrap. See **3.4 Key Facts** for more examples.
2. Careful packaging avoids contamination of product. Careful packaging limits spoilage.

3. Labelling of a meat product should include: Manufacturer name and address, product name, quantity (weight/ volume), production and expiration date, storage conditions, ingredients, allergens
4. The coldest part of refrigerator is the best place to store meat products.



Self-Reflection

1. Ask trainees to re-take the self-assessment at the beginning of the unit. They should then fill in the table in the Trainee's Manual to identify their areas of strength, areas for improvement and actions to take to improve their learning in the future.
2. Discuss trainees' results with them individually. Identify areas that many trainees find difficult and plan to give additional support as needed (ex. use class time before you begin the next learning outcome to go through commonly identified difficult concepts).



Summative Assessment

Integrated situation	Resources
<p>Paniel Meat Processing is a professional meat processing company in Rwanda, which is known to make good smoked sausage.</p> <p>PMP recently won tender to supply smoked sausages to Karibu Hotel. The hotel is expecting more guests for the next month who will be participating in a conference on environmental conservation.</p> <p>But the company is under-staffed to satisfy the demand of customers. Now the PMP has decided to hire 5 casual labours in order to bridge the gap. The new staff will assist with making smoked sausages during the conference.</p> <p>During the recruitment process, the recruitment team has shortlisted 25 candidates and you are one of them. The team has prepared a practical exam which is organised as follows:</p> <ol style="list-style-type: none"> 1. The first phase of exam is: <ul style="list-style-type: none"> - Preparation of the workplace and animals for slaughtering and preparation of raw materials. 	<p>Brush, sprayers, bucket, napkins, torchon, basin, P.P.E, detergents, soaps, disinfectants, liquid soap, hot water system, grinder, mixer, meat tenderizer, stuffer, vacuum packer, deep freezer, cooking vat, glass fridge, containers, pH meter, balance (electric, normal), thermometer, trays, Stainless steel tables, knives, stainless steel plates, knives sharpener, bio-degradable plastic, packages, cutter, beef meat, natural casings, salt, cardamom, White or black pepper, spices, garlic powder, ice, phosphate, use curing agent (nitrite), and chili powder, paprika powder or cream, peppers,</p>

- All candidates will work together and for every step performed each candidate will be questioned individually to demonstrate key knowledge and skills.

fat, meat, sugar, milk powder, smoke house, hanging racks, wood, fresh sausage, sawdust, coolers.

2. The second phase of exam is:

- Individual-based, in which each candidate will make smoked sausage.
- Each sausage should weigh 60 grams maximum and be 15 cm long. In addition, all casings should be natural.
- The sausage should be made within 3 hours.

Task 1	Task 2	Task 3
To make smoked sausage	To make dried sausage	To make cooked sausage
Resources		
brush, sprayers, bucket, serviettes, torchon, basin, PPE, detergents; soaps, disinfectants, liquid soap, disinfectants hot water system. grinder, mixer, meat tenderizer, stuffer, vacuum packer, deep freezer cooking vat, glass fridge, smokehouse containers, pH meter, balance (electric, normal), thermometer, trays, stainless steel tables, knives, stainless steel plates, knives sharper, bio-degradable plastic, packages, cutter, beef meat, natural casings, salt, cardamom, white or black pepper, spices, garlic powder, ice, phosphate, use curing agent (nitrite), and chili powder, paprika powder or cream, peppers, fat, meat, sugar, milk	brush, sprayers, bucket, serviettes, torchon, basin, PPE, detergents, soaps, disinfectants, liquid soap, disinfectants hot water system. grinder, mixer, meat tenderizer, stuffer, vacuum packer, deep freezer cooking vat, glass fridge, drying chamber, dryers, containers, pH meter, balance (electric, normal), thermometer, trays, stainless steel tables, knives, stainless steel plates, knives sharper, bio-degradable plastic, packages, cutter, pork meat, natural casings, salt, cardamom, white or black pepper, spices, garlic powder, ice, phosphate, use curing agent (nitrite), and chili powder, paprika powder or cream, peppers, fat, meat, sugar, milk	brush, sprayers, bucket, serviettes, torchon, basin, PPE, detergents; soaps, disinfectants, liquid soap, disinfectants, hot water system, grinder, mixer, meat tenderizer, stuffer, vacuum packer, deep freezer, cooking vat, glass fridge, cooking vat, containers, pH meter, balance (electric, normal), thermometer, trays, stainless steel tables, knives, stainless steel plates, knives sharper, bio-degradable plastic, packages, cutter, meat, from beef and pork, natural casings, salt, cardamom, white or black pepper, spices, garlic powder, ice, phosphate, use curing agent (nitrite), and chili powder, paprika powder or cream, peppers, fat, meat, sugar, milk powder, hanging racks,

powder, smoke house, hanging racks, wood, fresh sausage, sawdust, coolers	powder, hanging racks, wood, fresh sausage, coolers	wood, fresh sausage, coolers
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Assessment Criterion 1: Quality of process

Checklist	Score	
	Yes	No
Indicator 1: Hygiene and sanitation practices are properly applied in accordance with work instructions		
Processing operations		
Processing building (site, size, buildings)		
Equipment		
Sanitary facilities		
Liquid and solid waste disposal		
Indicator 2: Proper restraining of animals in accordance with animals welfare protocol		
Identification of restraint devices		
Physical restraint/mechanical devices		
Chemical restraint		
Safety device/ protective devices		
Application of restraining techniques/methods		
Head restrain		
Leg and body restraint		
Upright restraint		
Rotate system either upside down or on its side		
Indicator 3: Correct stunning, shackling, and lifting of animals in accordance with animal welfare regulations workplace requirements		
Methods for livestock stunning		
Mechanical		
Penetrating captive bolt		
Electrical		
Anaesthetic/gas stunning/killing		
Shackling position		
Vertical		
Horizontal		
Shackling methods		
Hind leg shackling		
Elevated stunning animal on the bleeding rail		
Sticking techniques		
Transverse Incision of the neck		

Lateral stab incision of the neck		
Indicator 4: Adequate preparation, checking, and adjustment of materials, tools and equipment in accordance with processing specifications		
Cleaning products used in butchery		
Caustic soda		
Nitric acid		
Chlorine		
Bleach water		
Preparation of cleaning solution		
Safety and health precautions		
Select equipment, materials, and tools		
Wash the equipment		
Check the equipment		
Functionality		
Parameters of visual inspection		
Effective use of the equipment and materials		
Adjust the equipment, tools and materials		
Installation procedures of the equipment		
Maintenance and adjustment		
Safety and health precautions of the equipment		
Testing of equipment		
Indicator 5: Appropriate skinning, evisceration, washing, and cutting carcass in accordance with approved specifications and standard procedures		
Wash carcass		
Dip in water		
Spray		
Wash on belt-conveyor		
Cutting techniques		
Mincing/grinding		
Chopping		
Frozen meat cutting		
Chopping by emulsifying machine		
Cutting of fatty tissues		
Skinning techniques		
Dehorning		
Skinning		
Removing hoof		
Indicator 6: Proper deskinning, deboning, slicing, and cutting of meat for curing according to meat products specifications		
Curing system of meat pieces		
Dry curing		

Wet curing		
Meat deboning and cutting		
Sanitized workplace and equipment		
Deboning meat		
Trimming meat		
Mincing and chopping meat		
Meat in grades		
Apply salt		
Heat treatment		
Store meat cuts		
Cooling facilities		
Use thermometer		
Meat cuts in cooling facility		
Temperature adjustment and monitoring		
Indicator 7: Proper preparation of ingredients according to the type of products to be processed		
Types of ingredients		
Water		
Salt		
Sodium nitrite		
Spices		
Meat pieces		
Other additives		
Weighing, dosage, and mixing techniques of ingredients		
Wet curing mixing is well performed		
Dry curing mixing is well performed		
Indicator 8: Appropriate grinding of mixtures based on requirements and product specifications		
Appropriate grinding of mixtures based on product specifications		
Recognize the size requirement of the grinding mixture		
Practise the grinding and mixing procedures		
Prepare ingredients		
Wash ingredients		
Chop ingredients		
Mix ingredients		
Chill grinding instrument		
Clean grinding instrument		
Grind mixture		
Indicator 9: Adequate assisting in making meat products based on the requirements and standards		

Meaning of sausage		
Outlines of the types of sausage		
Smoked sausage		
Cooked sausage		
Dried sausage		
Explain the processing methods of the different types of sausage		
Make sausage		
Smoked		
Cooked		
Dried		
Indicator 10: Appropriate packing and storage of meat products according to requirements and standards		
Packaging and storage techniques useful in meat and meat products		
Anaerobic packages		
Minimum residual oxygen		
Hermetic seals		
Oxygen and water vapor impermeable materials		
Non-hermetic aerobic package		
Marginal seals		
Oxygen permeable materials		
Water vapor permeable and impermeable materials		
Hermetic aerobic packages		
Hermetic seals		
Materials permeable to oxygen but impermeable to water vapor		
Elimination of void space vacuum		
Labelling techniques		
Storage conditions and monitoring		
Safe store time in the refrigerator		
Safe storage time in the freezer		
Safety measures during packaging and storage		
Observation		

Assessment Criterion 2: Quality of product

Checklist	Score	
	Yes	No
Indicator 1: Quality of fresh meat		
Meat PH		
Meat texture		
Meat colour		
Meat smell		
Meat water holding capacity		
Meat fat accumulation in tissues		
Marbling of muscle meat		
Meat tenderness		
Storage life		
Meat microorganism count		
Indicator 2: Quality of meat products		
Meat smell		
Meat flavour		
Meat taste		
Tenderness		
Colour		
Meat texture		
Meat water holding capacity		
Meat fat content		
Meat spices content		
Meat PH		
Meat microorganism count		
Storage life of meat products		
Observation		

Assessment Criterion 3: Relevance

Checklist	Score	
	Yes	No
Indicator 1: Time is effectively managed		
3-hour time limit is respected		
Indicator 2: Techniques are applied		
Size reduction of meat is respected		
Mixing ratio is respected		
Utilization of spices is correctly applied		
Stuffing and filling are well done		
Heat treatment is well applied		
Indicator 3: Production output		
Cooked sausages - 10 kg		
Dried sausages - 10 kg		
Smoked sausages - 10 kg		
Observation		

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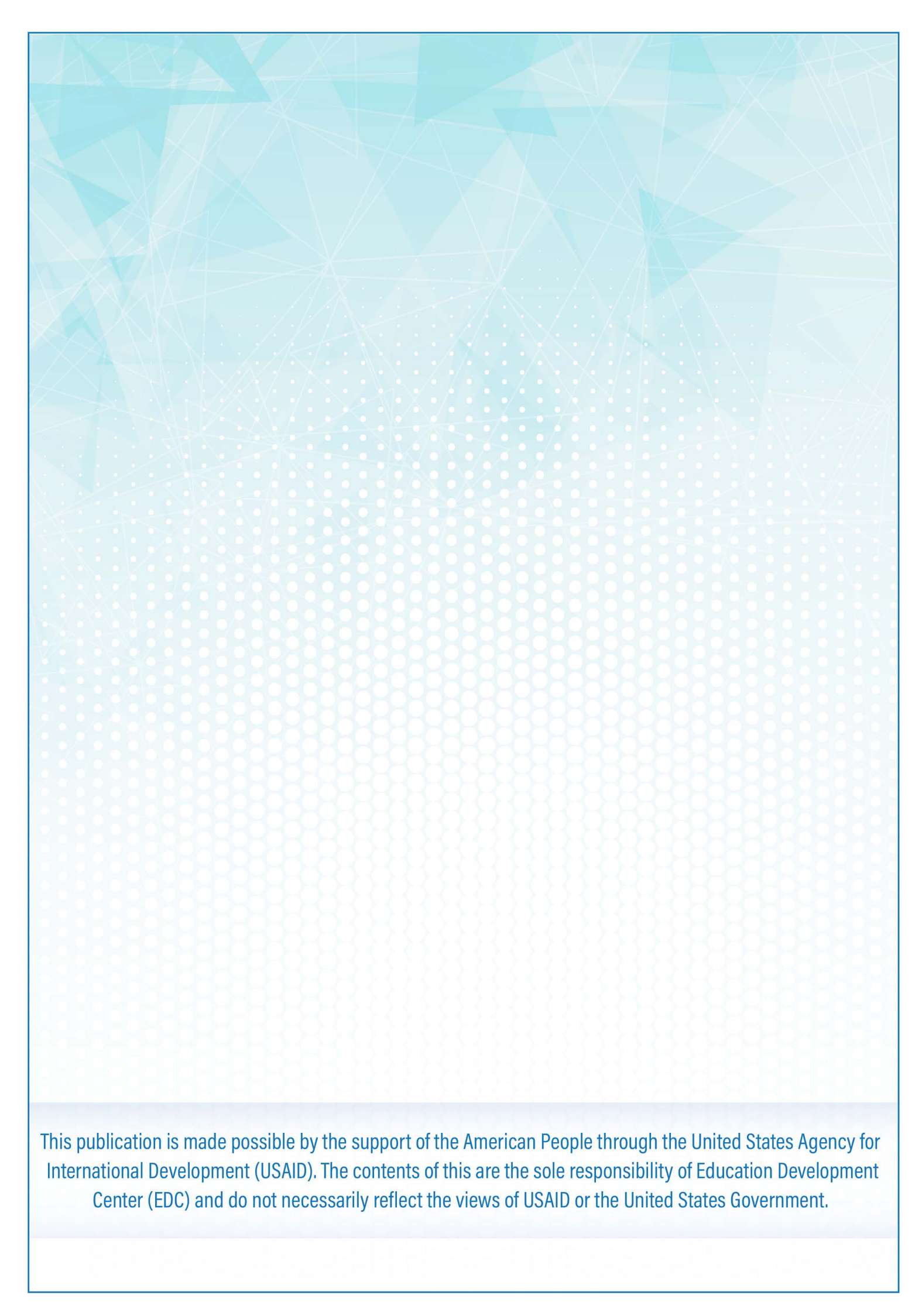
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