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HEAVY MACHINE OPERATOR

TRAINER GUIDE

National Vocational Certificate Level 3

Version 1 - November, 2019

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Contents

Introduction

Competence-based training helps to bridge the gap between what is taught in training and what tasks will be performed on the job. Training trainees to perform actual job functions helps to ensure that future front-line workers have the skills, knowledge and abilities required to perform their jobs properly, safely and effectively. In addition to competence-based training, assessment based on the performance of actual work competencies helps to ensure that:

- Trainees are performing their work tasks as safely as possible
- Performance gaps are recognized prior to serious incidents
- Training can be implemented to improve competence.

There are significant benefits to competence-based training:

1. Cost Effectiveness

Since training activities and assessments in a competence-based approach are goal-oriented, trainers focus on clearly defined areas of skills, knowledge and understanding that their own industry has defined in the competence standards. At the same time, trainees are more motivated to learn when they realize the benefits of improved performance.

2. Efficiency

The transfer gap between the training environment and working on the job is reduced substantially in a competence-based approach. This is because training and assessment are relevant to what needs to be done on the job. As a result, it takes less time for trainees to become competent in the required areas. This, in turn, contributes to improved efficiency where training and assessment are concerned.

3. Increased Productivity

When trainees become competent in the competence standards that their own industry has defined, when they know what the performance expectations are and receive recognition for their abilities through successful assessments, they are likely to be more motivated and experience higher job satisfaction. The result is improved productivity for organizations. The communication and constructive feedback between future employers and employees will improve as a result of a competence-based approach, which can also increase productivity.

4. Reduced Risk

Using a competence-based approach to training, development, and assessment, employers are able to create project teams of people with complementary skills. A trainee’s record of the skills, knowledge and understanding relating to the competence standards they have achieved can be used by a future employer to identify and provide further relevant training and assessment for new skills areas. Competence standards can shape employee development and promotional paths within an organization and give employees the opportunity to learn more competencies beyond their roles. It can also provide organizations with greater ability to scale and flex as needed, thereby reducing the risk they face.

5. Increased Customer Satisfaction

Employees who have been trained and assessed using a competence-based approach are, by the definition of the relevant competence standards, able to perform the required tasks associated with a job. The knock-on effect is that, in service-related industries, they are able to provide high service levels, thereby increasing customer satisfaction. In production or manufacturing industries, they are able to work closely to industry standards in a more effective and efficient way.

Lesson plans

This manual provides a series of lesson plans that will guide delivery of each module for the Heavy Machinery Operator qualification. It is important for trainers to be flexible and be ready to adapt lesson plans to suit the context of the subject and the needs of their trainees.

Good teachers acknowledge that CBT means each and every trainee in the class learns at a different speed. The good teacher is prepared to throw aside the day's lesson plan and do something different (and unplanned) for the class even if it means 'writing' a lesson plan for each trainee to match their learning pace for that day or week.

Learning by doing is different from learning theory and then applying it. To learn to do something, trainees need someone looking over their shoulder saying 'it's not quite like that, it's like this', 'you do it like this because …', or even 'tell me why you chose to do it like this?'.

In this way, trainees learn that theoretical knowledge is meaningless if it is not seen in the context of what they are doing. In other words, if a trainee doesn't know why they do something, they will not do it competently (skills underpinned by knowledge = competent performer).

This is how a Heavy Machinery Operator acquires a practical grasp of the standards expected. It's not by learning it in theory, but because those standards are acquired through correction by people who show what the standards are, and correct the trainees where they do not meet those standards, and where they repeat it until they have internalized those standards.

Demonstration of Skill

Demonstration or modeling a skill is a powerful tool, which is used, in vocational training. The instructions for trainers for demonstration are as under:

a) Read the procedure mentioned in the Trainer Guide for the relevant Learning Unit before demonstration.
b) Arrange all tools, equipment and consumable material, which are required for demonstration of a skill.
c) Practice the skill before demonstration to trainees, if possible.
d) Introduce the skill to trainees clearly at the commencement of demonstration.
e) Explain how the skill relates to the skill(s) already acquired and describe the expected results or show the objects to trainees.
f) Carry out demonstration in a way that can be seen by all trainees.
g) Use the same tools and materials that the learner will be using.
h) Go through EACH of the steps involved in performing the skill.
i) Go SLOWLY - describe each step as it is completed.

j) Encourage the learners to move around and watch what you are doing from a number of different angles.
k) Identify critical or complex steps, or steps that involve safety precautions to be followed.
l) Explain theoretical knowledge where applicable and ask questions to trainees to test their understanding.
m) Try to involve the learners: Ask them questions about why they think the process may work that way.
n) Repeat critical steps in demonstration, if required.
o) Summarize the demonstration by asking questions to trainees.

Involvement in the process (actively seeing) is important at this stage. When you work on getting involved, getting people to participate, you make them a part of what is happening. Questions for clarification or explanation are important throughout the demonstration. It is up to the learners to ask questions about things they do not understand, but it is also important for trainers to seek out and elicit questions from learners. A trainer may need to do repeated demonstrations of difficult or complex skills.

Remember that the learner will learn a lot from your demonstration - and not just the demonstration itself. Learners will learn about how to perform the skills, but they will also learn from watching demonstrations how trainers treat the tools or materials and how they follow safety procedures.

After the demonstration, it is important to again seek out questions - be sure all questions are answered. The trainer should ask the learner if they are ready to try the skill. If not, there may be a need for recycling the demonstration (or part of it), and clarifying some of the information.

Overview of the program

Course: Level 3 Heavy Machinery Operator	**Total Course Duration:** 380 Hours

Course Overview:

In order to build the capacity of technical and vocational training institutes in Pakistan through provision of demand driven competencies-based trainings in construction sector the NAVTTC, and TEVT Sector Support Program (TSSP) have joined hands together to develop Training courses for construction sector. These trainings will not only build the capacity of existing workers of this sector but also support the youth to acquire skills best fit for this sector. The benefits and impact of development of these training courses will be on both demand and supply side.

Based upon this demand of industry these competency-based trainings for Heavy Machine Operator are developed under National Vocational Qualification Framework (NVQF) (Level 1 to 4). The training courses mainly cover competencies along with related knowledge and professional skills which are essential for getting a job or self-employed.

The training courses are also in line with the vision of Pakistan's National Skills Strategy (NSS), National TVET Policy and National Vocational Qualification Framework (NVQF). This provides policy directions, support and an enabling environment to the public and private sectors to impart training for skills development to enhance social and economic profile.

The purpose of the training is to provide skilled manpower to improve the existing capacity of construction sector. This training will provide the requisite skills to the trainees to operate Heavy Machines. It will enable the participants to meet the challenges in the field of construction industry. Further, to improve the skill level of the Operators and prepare them for the construction industry to meet the market competition nationally and internationally. The core purpose of this qualification is to produce employable Heavy Machine Operators who could operate Heavy Machines according to national and international standards. In addition, this qualification will prepare unemployable youth to employee in construction sector.

List of Modules

Module Title and Aim	Learning Units	Theory Days/hours	Workplace Days/hours	Timeframe of Modules
Module A: **Apply Work Health and Safety Practices (WHS)** **Aim:** This unit describes the skills to work with safety and participate in hazard assessment activities, follow emergency procedures and participate OHS practices in process	**LU1.** Implement safe work practices at work place **LU2.** Participate in hazard assessment activities at a work place **LU3.** Follow emergency procedures at workplace **LU4.** Participate in OHS consultative processes	**04**	**16**	**20**
Module B: **Identify and Implement Workplace Policy and Procedures** **Aim:** This unit describes the skills and knowledge required to develop and implement a workplace policy & procedures and to modify the policy to suit changed circumstances. It applies to individuals with managerial responsibilities who undertake work developing approaches to create, monitor and improve strategies and policies within workplaces and engage with a range of relevant stakeholders and specialists.	**LU1.** Identify workplace policy & procedures **LU2.** Implement workplace policy & procedures **LU3.** Communicate workplace policy & procedures **LU4.** Review the implementation of workplace policy & procedures	**02**	**08**	**10**
Module C: **Communicate at Workplace** **Aim:** This unit describes the performance outcomes, skills and knowledge required to develop communication skills at workplace. It covers gathering, conveying and receiving information, along with completing assigned written information under direct	**LU-1:** Communicate within the organization **LU-2:** Communicate outside the organization **LU-3:** Communicate effectively in workgroup **LU-4:** Communicate in writing	**02**	**08**	**10**

supervision.				
Module D: **Perform Computer Application Skills** **Aim:** This unit describes the skills and knowledge required to use spreadsheet applications, prepare in page documents, develop familiarity with Word, Excel, Access, PowerPoint, email, and computer graphics basics. It applies to individuals who perform a range of routine tasks in the workplace using a fundamental knowledge of spreadsheets, Microsoft office and computer graphics in under direct supervision or with limited responsibility.	**LU1.** Prepare In-page documents as per required information **LU2.** Prepare Spreadsheets as per required information **LU3.** Use MS Office as per required information **LU4.** Perform computer graphics in basic applications **LU5.** Create Email account for communications	**02**	**08**	**10**
Module E: Manage Personal Finances **Aim:** This unit of competency describes the outcomes required to manage develop, implement and monitor a personal budget in order to plan regular savings and manage debt effectively.	**LU1.** Develop a personal budget **LU2.** Develop long term personal budget **LU3.** Identify ways to maximize future finances	**02**	**08**	**10**
Module F: **Transport Machines** **Aim:** This module covers the skills and knowledge required to Prepare to load machine and attachments, Load or assist with loading machine and attachments, Assist with securing machine and attachments, Unload or assist with unloading machine and attachments, Prepare rubber-tired machine for road travel and Drive rubber tired machine on public roads.	**LU-1:** Prepare to load machine and attachments **LU-2:** Loading machine and attachments **LU-3:** Securing machine and attachments **LU-4:** Unload or assist with unloading machine and attachments **LU-5:** Prepare rubber-tired machine for road travel **LU-6:** Drive rubber-tired machine on public roads	**16**	**64**	**80**

Module G: **Operate Bulldozer** **Aim**: This module covers the skills and knowledge required to Operate Controls, Strip and stockpile surface materials, Cut and fill material, create slopes, create ditches, spread ballast, Rip dense materials, Clear land and Push scraper.	**LU-1:** Operate controls **LU-2:** Strip and stockpile surface materials **LU-3:** Cut and fill material **LU-4:** Create slopes **LU-5:** Create ditches **LU-6:** Spread ballast **LU-7:** Rip dense materials **LU-8:** Clear land **LU-9:** Push scraper	**28**	**112**	**140**
Module H: **Operate Wheel Loader** **Aim:** This module covers the skills and knowledge required to Install attachments, Operate controls, Dig, Carry (tram) & Stockpile materials, Place and spread materials, Backfill trenches , excavate and load rucks	**LU-1:** Install attachments **LU-2:** Operate controls **LU-3:** Dig, carry (tram) & stockpile materials **LU-4:** Place and spread materials **LU-5:** Backfill trenches & excavate **LU-6:** Load trucks	**20**	**80**	**100**
	TOTAL	**76**	**304**	**380**

LESSON PLAN MODULE F

Module F:

Transport Machines

Learning Unit:

LU-1: Prepare to Load Machine and Attachments

LU-2: Load or Assist with Loading Machine and Attachments

LU-3: Assist with Securing Machine and Attachments

LU-4: Unload or Assist with Unloading Machine and Attachments

LU-5: Prepare Rubber-Tired Machine for Road Travel

LU-6: Drive Rubber Tired Machine on Public Roads

Learning Outcomes:

Trainee will be able to understand and gain necessary practical skills to practically Prepare to load machine and attachments, Load or assist with loading machine and attachments, assist with securing machine and attachments, Unload or assist with unloading machine and attachments, Prepare rubber-tired machine for road travel, Drive rubber-tired machine on public roads

Methods:	Key Notes:	Media:	Time:
Through Multimedia Presentations and Practical	The practical knowledge and skills to Load machine and attachments, Load or assist with loading machine and attachments, assist with securing machine and attachments, Unload or assist with unloading machine and attachments, Prepare rubber-tired machine for road travel, Drive rubber-tired machine on public roads	Multimedia and Practical on Trawler and Excavator and Grader	80 hours

Introduction

Introduction to the knowledge and practical skills required to load machine and attachments, Load or assist with loading machine and attachments, assist with securing machine and attachments, Unload or assist with unloading machine and attachments, Prepare rubber-tired machine for road travel, Drive rubber-tired machine on public roads

Main Body

	• Explain the methods of loading the machines on carrier • Explain the safety measures to be kept in mind • Explain the loading of machine step by step • Explain the use of slings or ropes • Explain the steps for unloading the machine
Conclusion	
Summarize the lessons and arrange a formative assessment of both theoretical and practical nature.	
Assessment Ask questions about previous lesson and ask learners to practically perform the task	
	Total time:

LESSON PLAN MODULE G

Module G:

Operate Bulldozer

Learning Unit:

LU-1: Operate Controls

LU-2: Strip and Stockpile Surface Materials

LU-3: Cut and Fill Material

LU-4: Create Slopes

LU-5: Create Ditches

LU-6: Spread Ballast

LU-7: Rip Dense Materials

LU-8: Clear Land

LU-9: Push Scraper

Learning Outcomes:

Trainee will be able to understand and gain necessary skills to practically Operate Controls, Strip and Stockpile Surface Materials, Cut and Fill Material, Create Slopes, Create Ditches, Spread Ballast, Rip Dense Materials, Clear Land, Push Scraper using the Bull Dozer Machine

Methods:	Key Notes:	Media:	Time:
Through Multimedia Presentations and Practical	The practical knowledge and skills to Operate Controls, Strip and stockpile surface materials, Cut and fill material, create slopes, Create ditches, Spread ballast, Rip dense materials, Clear land, Push scraper	Multimedia and Practical on Bull Dozer	140 hours

Introduction

Introduction to the knowledge and practical skills required to Operate Controls, Strip and stockpile surface materials, Cut and fill material, create slopes, create ditches, spread ballast, rip dense materials, Clear land, Push scraper using the bull dozer machine

Main Body

	• Explain the bull dozer, its functions, its application in the construction industry • Show the trainees bull dozer physically and familiarize them with its controls and components • Demonstration of the practical use of bull dozer on training site
Conclusion	
Summarize the lessons and arrange a formative assessment of both theoretical and practical nature.	
Assessment Ask questions about previous lesson and ask learners to practically perform the task	
	Total time:

LESSON PLAN MODULE H

Module H:

Operate Wheel Loader

Learning Unit:

LU-1: Install Attachments

LU-2: Operate Controls

LU-3: Dig, Carry (tram) & Stockpile Materials

LU-4: Place and Spread Materials

LU-5: Backfill Trenches & Excavate

LU-6: Load Trucks

Learning Outcomes:

Trainee will be able to understand and gain necessary skills to practically Install Attachments, Operate Controls, Dig, carry (tram) & Stockpile Materials, Place and Spread Materials, Backfill Trenches & Excavate, Load Trucks using the Wheel Loader machine

Methods:	Key Notes:	Media:	Time:
Through Multimedia Presentations and Practical	The practical knowledge and skills to Operate Controls, Dig, Carry (tram) & Stockpile Materials, Place and Spread Materials, Backfill Trenches & Excavate, Load Trucks	Multimedia and Practical on Wheel Loader	100 hours

Introduction

Introduction to the knowledge and practical skills required to install attachments, operate controls, Dig, carry (tram) & Stockpile materials, Place and spread materials, backfill trenches & Excavate, Load trucks using the Wheel Loader machine

Main Body

- Explain the wheel loader, its functions, its application in the construction industry
- Show the trainees wheel loader physically and familiarize them with its controls and components
- Demonstration of the practical use of wheel loader on training site

Conclusion

	Summarize the lessons and arrange a formative assessment of both theoretical and practical nature.	
	Assessment Ask questions about previous lesson and ask learners to practically perform the task	
		Total time:

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Module-F

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Module F: Transport Machines

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
LU1. Prepare to load machine and attachments	Begin the session through an illustrative presentation on how to Prepare to load machine and attachments. Ensure that the presentation addresses the following points, including demonstrations of equipment and methods where appropriate: • Arrange a video or slide presentation showing the trainees transportation of Bull Dozer, Wheel Loader, Excavator and Grader • Describe in detail the hand signals, signs used for communication between operator and driver or rigger for loading machine • Describe in detail the role of transport vehicle driver, on ground facilitator and machinery operator for this activity • Describe type of hazards to be encountered during loading like utility lines, terrain and road condition • Describe carrying capacities and types of transport vehicles • Describe road, weather and deck conditions • Describe preparation of loading sites (ramp) • Describe the methods/equipment of lifting up of attachments on the trailer • Describe maintenance to be ensured before loading the machine • Describe preparation of loading sites (ramp) • Describe the methods/equipment of lifting up of attachments on the transport vehicle • Describe maintenance to be ensured before loading the machine-like proper sealing of lubricants, securing of mirrors and front/back wind screen, lowering the attachments and equipment, sling the boom, bucket, blade properly.	Classroom	• Multimedia • Machines • Loading Truck • Tools and Equipment • Safety Dress

Module F: Transport Machines

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
	Display a slide or flip chart with a key question relating to Prepare to load machine and attachments. **Step 1 – Think** Working on their own, each learner thinks about the question and makes notes of their responses or key points which they believe to be important. **Step 2 – Pair** For the next step, each learner pairs up with a partner. The two learners exchange their ideas and make further notes to add clarity to their own ideas. **Step 3 – Share** The final step is for you to invite different pairs to share the ideas they have discussed in response to the key question relating to Prepare to load machine and attachments. Learners must be able to practice and develop their knowledge and skills relating to Prepare to load machine and attachments in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		
LU2. Load or Assist with Loading Machine and Attachments	Deliver an illustrated presentation/Demonstration on ways to Load or Assist with Loading Machine and Attachments. Ensure that the presentation addresses the following points • Select Bulldozer a machine for loading • Arrange transportation vehicle • Take the trainees to the Machine and loading site • Describe Loading techniques. • Describe Tie-down points of machine.	Classroom / Site	• Bull Dozer/Excavator • Slings • Transportation vehicle • Safety clothes

Module F: Transport Machines

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
	• Describe expected hazards while loading • Describe how to avoid hazards while loading • Describe important signals followed while loading Prepare either: • A flip chart / A PowerPoint slide / A handout …showing the key topics about Load or Assist with Loading Machine and Attachments. Go through all the key topics briefly and then allocate **one key topic** to each group. Learners need to work in their small groups discussing the key topic that has been allocated to their group. Each group should use a sheet of flip chart paper to record **three main points** from their discussions that relate to **their key topic**. After the discussion, begin the feedback session. Ask one group to come to the front of the class with their flipchart. Put up the flipchart where it can be easily seen by other learners. Ask the group to share the main points they have recorded for their key topic for Load or Assist with Loading Machine and Attachments. Discuss these main points briefly with the whole group. Learners should make additional notes **on the flip chart** to record additional points their group had not identified. Then ask the next group to share their flipchart showing the main points they have recorded for the next key topic. Repeat the discussion process. Continue until you have covered all the key topics. End the group discussion activity with a summary. Photograph or scan all the flipcharts and use these to create a handout to distribute to all learners. Demonstrate the following • Prepare ramp for loading the machine • Instruct the driver to bring the transportation vehicle at suitable position		

Module F: Transport Machines

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
	near to the ramp • Perform loading of machine carefully and show the trainees Learners must be able to practice and develop their knowledge and skills relating to Load or Assist with Loading Machine and Attachments in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		
LU3. Assist with Securing Machine and Attachments	Lead a brain storm discussion on how to Assist with securing Machine and Attachments Test and Demonstrate the following: • Describe methods of securing machine, parts and attachments • Describe accessories/ attachments to be used for securing • Describe communication signals between trailer driver and Operator and provide trainee a handout for memorizing it. Arrange a group discussion and ask questions from trainees. Arrange a group activity and ask trainees to write a checklist for securing machine, parts and attachments Demonstrate on how to perform • Protect equipment from damage, such as cover windshield and exhaust pipe • Secure attachments, such as bucket • Assist transport vehicle driver as required, such as secure machines, attach warning flags and reflectors.	Classroom Onsite	• Machine • Slings • Tools • Reflectors • Mirror/windshield covers • Attachments • Tools and equipment

Module F: Transport Machines

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
	Ask every trainee to perform the above-mentioned tasks individually Learners must be able to practice and develop their knowledge and skills relating to Assist with securing Machine and Attachments in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		
LU4. Unload or Assist with Unloading Machine and Attachments	Deliver an illustrated presentation/Demonstration on ways to Unload or Assist with Unloading Machine and Attachments. Ensure that the presentation addresses the following points • Select Bull Dozer or Excavator machine for unloading • Describe Unloading techniques. • Describe expected hazards while unloading • Describe how to avoid hazards while unloading • Describe important signals followed while unloading • Describe method of unloading. Prepare either: • A flip chart / A PowerPoint slide / A handout …showing key topics for Unload or Assist with Unloading Machine and Attachments. Learners need to work in small groups discussing the key topics. Each group should make notes from their discussions that identify **three main points** that related to **each key topic**. After the discussion, begin the feedback session. Ask one group to share the main points they have recorded for the first key topic for Unload or Assist with Unloading Machine and Attachments. Discuss these main points briefly with the whole group. Learners should make additional notes to record additional points their group had	Classroom Onsite	• Bull Dozer/Excavator • Slings • Transportation vehicle

Module F: Transport Machines

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
	not identified. Then ask the next group to share the main points they have recorded for the second key topic. Repeat the discussion process. Continue until you have covered all the key topics. End the group discussion activity with a summary. Demonstrate the following to be performed by the trainees • Describe Tie-down points of Bull Dozer • Prepare ramp for unloading the machine • Perform unloading of machine carefully and show to the trainees Learners must be able to practice and develop their knowledge and skills relating to Unload or Assist with Unloading Machine and Attachments in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		

Module F: Transport Machines

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
LU5. Prepare Rubber-Tired Machine for Road Travel	Begin the session through an illustrative presentation on how to Prepare Rubber-Tired Machine for Road Travel. Ensure that the presentation addresses the following points, including demonstrations of equipment and methods where appropriate: • Arrange a video or slide presentation showing the tired machine movement on roads, tired machine is wheel loader, grader and excavator • Explain limitations on public roads, such as speed, overhead restrictions and blind spots • Explain route and destination. Arrange a group discussion and ask questions from trainees. Arrange a group activity and ask trainees to write a checklist for securing machine, parts and attachments Demonstrate the following • Secure attachments in proper position for road travel. • Explain to perform Complete inspection, such as check brakes, steering, lights, tires and back-up warnings, Cleaning of equipment. • Ask every trainee to perform the above-mentioned tasks individually Learners must be able to practice and develop their knowledge and skills relating to Prepare Rubber-Tired Machine for Road Travel in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.	Classroom, Onsite	

Module F: Transport Machines

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
LU6. Drive Rubber Tired Machine on Public Roads	Lead a brain storm discussion on how to Drive Rubber Tired Machine on Public Roads Test and Demonstrate the following: • Define applicable legislation, such as traffic laws • Describe reading of road map and following of routes to destination • Describe road conditions and speed limits • Describe travel limitations and hazards • Comply with legislation, such as traffic laws. Display a slide or flip chart with a key question relating to Drive Rubber Tired Machine on Public Roads. **Step 1 – Think** Working on their own, each learner thinks about the question and makes notes of their responses or key points which they believe to be important. **Step 2 – Pair** For the next step, each learner pairs up with a partner. The two learners exchange their ideas and make further notes to add clarity to their own ideas. **Step 3 – Share** The final step is for you to invite different pairs to share the ideas they have discussed in response to the key question relating to Drive Rubber Tired Machine on Public Roads. Learners must be able to practice and develop their knowledge and skills relating to Drive Rubber Tired Machine on Public Roads in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.	Classroom, Onsite	Loaded Transportation Trucks

Multiple Choice Questions (MCQ's)

Question 1	When loading a machine?		A	Machine Engine should be on
		Xx	B	Machine should be switched off
			C	Machines attachments should be lifted
			D	Machine
Question 2	Why it is important to secure attachments?	Xx	A	It is the standard safety precaution for loading machines
			B	It is necessary to avoid damage to attachments.
			C	Loading vehicle can get damaged.
			D	Attachments can fall off during the journey
Question 3	What is the standard safety precaution in loading machine?	Xx	A	Secure the machine with proper slings and tie down
			B	Use a 22-wheeler trawler
			C	Use a big crane to lift machines
			D	Operator should sit inside the cabin
Question 4	What is preparation of loading/ unloading site?	Xx	A	Prepare strong ramp or platform for loading and un loading

		B	Clean the windscreen of machine
		C	Check the headlights of machine
		D	Check the brakes of machine
Question	**5** What is the importance of communicating with the driver of loading vehicle?	A	It is very important to perform smooth job completion
		Xx B	Without proper communication hazards can happen
		C	To maintain friendly relation
		D	To encourage driver

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Module-G

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Module G: Operate Bull Dozer

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
LU1. Operate Controls	Begin the session through an illustrative presentation on how to Operate Controls of Bulldozer. Ensure that the presentation addresses the following points, including demonstrations of equipment and methods where appropriate: 1. Make trainees recall by a quiz about the types and function of Bull Dozer from previous Module#2, Level1 • Take trainees to the machine and familiarize them with its complete components and all systems like hydraulic system, drive terrain, blades, ripper, engine, filters and their location, lubricant levels, chain and pulley functioning and operator cabin insight • Explain the trainee's safety procedures for Bull Dozer operations • Explain the trainees how to mount up and come down from the Bull Dozer safely • Explain the trainee's steps to perform when sitting inside the operator cabin 2. Make trainees recall by a quiz about the engine off protocols of Bull Dozer from previous Module#1, Level-2 3. Make trainees recall by a quiz about the engine on protocols of Bull Dozer from previous Module#2, Level-2 4. Ask the trainees to revise the checklists of all modules of Level-2 with respect to Bull Dozer 5. Perform engine start and warmup actions 6. Deliver detailed lectures on the following points. • **Define basic operating functions inside the operator Cabin** • **Describe different operating controls and their functions**	Classroom On site	• Multi media • Bulldozer • Safety dress

Module G: Operate Bull Dozer

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
	• **Describe different situations which an operator can encounter under different conditions** • **Describe smooth and safe handling of controls** 7. Perform operating of all controls and make trainees memorize and observe carefully 8. Start driving the bull dozer and show the trainees operating of all functions simultaneously 9. Give every trainee 05 minutes to drive and check all controls practically 10. Give every trainee 05 minutes lecture inside the cabin 11. Sit with every trainee inside cabin and make them familiar with the controls completely while driving 12. Observe the trainee mistakes and highlight them to remove mistakes Learners must be able to practice and develop their knowledge and skills relating to Operating Controls in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		
LU2. Strip and Stockpile Surface Materials	Begin the session through an illustrative presentation on how to Strip and Stockpile Surface Materials. Ensure that the presentation addresses the following points, including demonstrations of equipment and methods where appropriate: • Describe types of soils and their characteristics • Describe attachments to be used for different types of soils • Describe techniques for clearing and scrubbing • Describe methods for spreading / stock pile of materials	Classroom Onsite	• Bulldozer • Material

Module G: Operate Bull Dozer

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
	• Distinguish waste layer from structural layer • Move full blade load with optimum capacity Prepare either: • A flip chart / • A PowerPoint slides • A handout …showing the key topics about Strip and Stockpile Surface Materials. Go through all the key topics briefly and then allocate **one key topic** to each group. Learners need to work in their small groups discussing the key topic that has been allocated to their group. Each group should use a sheet of flip chart paper to record **three main points** from their discussions that relate to **their key topic**. After the discussion, begin the feedback session. Ask one group to come to the front of the class with their flipchart. Put up the flipchart where it can be easily seen by other learners. Ask the group to share the main points they have recorded for their key topic for Strip and Stockpile Surface Materials. Discuss these main points briefly with the whole group. Learners should make additional notes **on the flip chart** to record additional points their group had not identified. Then ask the next group to share their flipchart showing the main points they have recorded for the next key topic. Repeat the discussion process. Continue until you have covered all the key topics. End the group discussion activity with a summary. Photograph or scan all the flipcharts and use these to create a handout to distribute to all learners. Give every trainee 10 minutes each for practical on machine. Observe each trainee carefully and note their mistakes. Highlight the mistakes of trainees and guide them for the removal of mistakes		

Module G: Operate Bull Dozer

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
	Learners must be able to practice and develop their knowledge and skills relating to Strip and Stockpile Surface Materials in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		
LU3. Cut and Fill Material	Begin the session through an illustrative presentation on how to Cut and Fill Material. Ensure that the presentation addresses the following points, including demonstrations of equipment and methods where appropriate: • Define capacities & capabilities of Bulldozer. • Describe method for estimation of cuts and fill • Describe grade checking instruments and their functions and how to operate them • Describe techniques of how to cut humps and fill depressions • Describe method of rough leveling of ground Learners need to devise 10 quiz questions with answers based on Cut and Fill Material. They must make sure their questions cover key topics for Cut and Fill Material. Issue each learner with 10 blank cards. Each learner should number the cards and write their name on one side with a question about Cut and Fill Material. On the reverse of the card, they should write an appropriate answer to their question. For the quiz, arrange learners in two equal teams. Ask one learner to keep score using a suitable score-card. Player 1 for Team A asks one of their questions to Player 1 of Team B, who needs to answer the question. Discuss the answer with the group and ask the group to determine if the answer is correct. Player 1 of Team A then confirms the answer they had devised. (You need to correct answers if the learner's answer was not wholly correct.) The scorekeeper records 1 mark for a correct answer under the appropriate team's score column. Play then passes to Player 1 of Team B, who asks their question to Player 1 of	Classroom Onsite	• Bulldozer • Attachments • material

Module G: Operate Bull Dozer

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
	Team A, and so on. Total the scores at the end of the quiz to see which team won. After the quiz, collect learners' question/answer cards and check that answers provided were correct. Return any incorrect answers to learners and ask them to change their answer to the correct one. 1. Give every trainee 10 minutes each to perform above tasks 2. Observe each trainee carefully and observe their mistakes 3. Highlight the mistakes of trainees and guide how to remove it Learners must be able to practice and develop their knowledge and skills relating to Cut and Fill Material in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		
LU4. Create Slopes	Begin the session through an illustrative presentation on how to Create Slopes. Ensure that the presentation addresses the following points, including demonstrations of equipment and methods where appropriate: • Describe stakes/specifications • Describe grade checking instruments • Describe methods of making slope in different conditions • Describe safety measures to be kept in consideration while working on slopes • Mark the stakes/specifications • Apply grade checking instruments • Cut the slope next to each row of stakes • Perform heavy cuts down hill • Match blade load with available power and traction and perform job downhill Prepare either: • A flip chart / A PowerPoint slide / A handout …showing key topics for Create Slopes. Learners need to work in small groups discussing the key topics. Each group should make notes from their discussions that	Classroom / on Site	Bulldozer

Module G: Operate Bull Dozer

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
	identify **three main points** that related to **each key topic**. After the discussion, begin the feedback session. Ask one group to share the main points they have recorded for the first key topic for Create Slopes. Discuss these main points briefly with the whole group. Learners should make additional notes to record additional points their group had not identified. Then ask the next group to share the main points they have recorded for the second key topic. Repeat the discussion process. Continue until you have covered all the key topics. End the group discussion activity with a summary. 1. Give every trainee 10 minutes each to perform above tasks 2. Observe each trainee carefully and observe their mistakes 3. Highlight the mistakes of trainees and guide trainees how to remove these Learners must be able to practice and develop their knowledge and skills relating to Create Slopes in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		
Lu5. Create Ditches	Lead a brain storm discussion on how to Create Ditches Test and Demonstrate the following: • Describe types/shapes of ditches • Describe special attachments to be used for making ditch like ripper • Describe common problems faced while making ditch • Describe ditches to be made under different environment/conditions like snow, mud, hard strata • Describe safety measures to be kept in mind while making ditch	Classroom / Site	Bulldozer

Module G: Operate Bull Dozer

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
	• Identify the required profile using grade checking instrument Display a slide or flip chart with a key question relating to Create Ditches. **Step 1 – Think** Working on their own, each learner thinks about the question and makes notes of their responses or key points which they believe to be important. **Step 2 – Pair** For the next step, each learner pairs up with a partner. The two learners exchange their ideas and make further notes to add clarity to their own ideas. **Step 3 – Share** The final step is for you to invite different pairs to share the ideas they have discussed in response to the key question relating to Create Ditches. 1. Give every trainee 10 minutes each to perform above tasks 2. Observe each trainee carefully and observe their mistakes 3. Highlight the mistakes of trainees and guide how to remove these Learners must be able to practice and develop their knowledge and skills relating to Create Ditches in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		
LU6. Spread Ballast	Begin the session through an illustrative presentation on how to Spread Ballast. Ensure that the presentation addresses the following points, including demonstrations of equipment and methods where appropriate: • Describe types of ballast	Classroom On site	Bulldozer

Module G: Operate Bull Dozer

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
	• Describe methods of spreading of ballast • Describe blade load versus power and traction in different soils conditions • Describe different levels to be maintained during spreading of ballast • Identify dumping location and pattern and show to trainees by performing the action • Demonstrate Matching blade load with available power and traction Prepare either: • A flip chart / • A PowerPoint slides • A handout …showing the key topics about Spread Ballast. Go through all the key topics briefly and then allocate **one key topic** to each group. Learners need to work in their small groups discussing the key topic that has been allocated to their group. Each group should use a sheet of flip chart paper to record **three main points** from their discussions that relate to **their key topic**. After the discussion, begin the feedback session. Ask one group to come to the front of the class with their flipchart. Put up the flipchart where it can be easily seen by other learners. Ask the group to share the main points they have recorded for their key topic for Spread Ballast. Discuss these main points briefly with the whole group. Learners should make additional notes **on the flip chart** to record additional points their group had not identified. Then ask the next group to share their flipchart showing the main points they have recorded for the next key topic. Repeat the discussion process. Continue until you have covered all the key topics. End the group discussion activity with a summary. Photograph or scan all the flipcharts and use these to create a handout to distribute to all learners.		

Module G: Operate Bull Dozer

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
	1. Give every trainee 10 minutes each to perform above tasks 2. Observe each trainee carefully and observe their mistakes 3. Highlight the mistakes of trainees and guide how to remove these Learners must be able to practice and develop their knowledge and skills relating to Spread Ballast in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		

Module G: Operate Bull Dozer

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
LU7. Rip Dense Materials	Deliver an illustrated presentation/Demonstration on ways to Rip Dense Materials. Ensure that the presentation addresses the following points: • Arrange a quiz for revision of Module#2, Level-01 of "Machinery and its attachments" and ask questions from the trainees about ripper's functions • Describe ripper and its functions in Bull Dozer • Through a video or slides, describe techniques/methods to rip dense materials or hard strata by using ripper Learners need to devise 10 quiz questions with answers based on Rip Dense Materials. They must make sure their questions cover key topics for Rip Dense Materials. Issue each learner with 10 blank cards. Each learner should number the cards and write their name on one side with a question about Rip Dense Materials. On the reverse of the card, they should write an appropriate answer to their question. For the quiz, arrange learners in two equal teams. Ask one learner to keep score using a suitable score-card. Player 1 for Team A asks one of their questions to Player 1 of Team B, who needs to answer the question. Discuss the answer with the group and ask the group to determine if the answer is correct. Player 1 of Team A then confirms the answer they had devised. (You need to correct answers if the learner's answer was not wholly correct.) The scorekeeper records 1 mark for a correct answer under the appropriate team's score column. Play then passes to Player 1 of Team B, who asks their question to Player 1 of Team A, and so on. Total the scores at the end of the quiz to see which team won. After the quiz, collect learners' question/answer cards and check that answers provided were correct. Return any incorrect answers to learners and ask them to change their answer to the correct one. 1. Give every trainee 10 minutes each to Rip Hard strata and Balance ripper load depth &	Classroom On site	Multimedia Bulldozer with Ripper

Module G: Operate Bull Dozer

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
	load to available power and traction 2. Observe each trainee carefully and observe their mistakes 3. Highlight the mistakes of trainees and guide how to improve. Learners must be able to practice and develop their knowledge and skills relating to Rip Dense Materials in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		
LU8. Clear Land	Deliver an illustrated presentation/Demonstration on ways to Clear Land. Ensure that the presentation addresses the following points: • Describe types of obstructions and hazards like hard rock, snags, pits, mud, uneven terrain, falling rocks, steep slopes • Describe how to work around obstructions and hazards • Describe precautions to be ensured while working around obstructions and hazards Give Prepare either: • A flip chart • A PowerPoint slides • A handout …showing key topics for Clear Land. Learners need to work in small groups discussing the key topics. Each group should make notes from their discussions that identify **three main points** that related to **each key topic**. After the discussion, begin the feedback session. Ask one group to share the main points they have recorded for the first key topic for Clear Land. Discuss these main points briefly with the whole group. Learners should make additional notes to record additional points their group had not identified. Then ask the next group to share the main points they have recorded for the second key	Classroom Onsite	Machine

Module G: Operate Bull Dozer

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
	topic. Repeat the discussion process. Continue until you have covered all the key topics. End the group discussion activity with a summary. 1. every trainee 10 minutes each to perform above tasks 2. Observe each trainee carefully and observe their mistakes 3. Highlight the mistakes of trainees and guide how to remove these Learners must be able to practice and develop their knowledge and skills relating to Clear Land in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		
LU9. Push Scraper	Lead a brain storm discussion on how to Push Scraper Test and Demonstrate the following: 1. Describe scrapper and techniques to push it 2. Describe problems faced during pushing of scrapper 3. Describe selection of engine power rating to the desired load and traction Display a slide or flip chart with a key question relating to Push Scraper. **Step 1 – Think** Working on their own, each learner thinks about the question and makes notes of their responses or key points which they believe to be important. **Step 2 – Pair** For the next step, each learner pairs up with a partner. The two learners exchange their ideas and make further notes to add clarity to their own ideas. **Step 3 – Share** The final step is for you to invite different pairs to share the ideas they have discussed in response to the key question relating to Push Scraper.	Classroom Onsite	Bulldozer

Module G: Operate Bull Dozer

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
	4. Give every trainee 10 minutes each to perform • Choose a scraper site and take the trainees to perform practical onsite • Balance engine power to load and traction • Minimize wear & tear impact, track spinning • Perform grade and level of scrapper • Remove obstacles and rocks. 5. Observe each trainee carefully and observe their mistakes 6. Highlight the mistakes of trainees and guide how to remove these Learners must be able to practice and develop their knowledge and skills relating to Push Scraper in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		

Multiple Choice Questions (MCQ's)

Question	**1**	Which machine you should use for ripping soil	Xx	A	Bull Dozer
				B	Wheel Loader
				C	Excavator
				D	Grader
Question	**2**	Which of the following is a part of Bull Dozer?		A	Boom
				B	Stick
				C	Bucket
			Xx	D	Blade
Question	**3**	Which of the following machines can be used for rough grading of the surface?		A	Grader
				B	Wheel Loader
				C	Excavator
			Xx	D	Bull Dozer
Question	**4**	Which are the bull dozer functions?		A	Strip and stockpile surface materials

		B	Cut and fill material
		C	Create slopes
	Xx	D	All of the above

Question	**5**	Which is not the function of the bull dozer?	Xx	A	Load Trucks
				B	Push scraper
				C	Clear land
				D	Rip dense materials

HEAVY MACHINE OPERATOR

Module-H

TRAINER GUIDE

National Vocational Certificate Level 3

Version 1 - November, 2019

Module H: Operate Wheel Loader

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
LU1. Install Attachments	Begin the session through an illustrative presentation on how to Install Attachments. Ensure that the presentation addresses the following points, including demonstrations of equipment and methods where appropriate: 1. Describe attachments and purpose. 2. Describe tools for installation of attachments. 3. Describe procedure for installation of attachments • Observe the trainee's mistakes and highlight them to remove these • Describe attachments and their purposes. • Describe tools for installation of attachments • Describe procedure for installation of attachments • Select appropriate tools • Position equipment and attachment for installation • Install attachments safely 1. Give every trainee 10 minutes each to perform above tasks 2. Observe each trainee carefully and observe their mistakes 3. Highlight the mistakes of trainees and guide them how to remove these Learners must be able to practice and develop their knowledge and skills relating to installing attachments in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.	Class Room and on site	• Multimedia • Machine • Tools • Attachments

Module H: Operate Wheel Loader

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
LU2. Operate Controls	Lead a brain storm discussion on how to Operate Controls Test and Demonstrate the following: • Make trainees recall by a quiz about the types and function of Wheel Loader from previous Module#2, Level1 • Take trainees to the machine and familiarize them with its complete components and all systems like hydraulic system, drive terrain, blades, engine, filters and their location, lubricant levels, suspension system, and operator cabin insight • Explain the trainee's safety procedures for Wheel Loader operation • Explain the trainees how to mount up and come down from the Wheel Loader safely • Explain the trainee's steps to perform when sitting inside the operator cabin • Perform engine start and warmup actions • Define basic operating functions inside the operator cabin • Describe different operating controls and their functions • Describe different situations which an operator can encounter under different conditions. • Describe adjustment technique of bucket 1. Give every trainee 05 minutes to drive and check all controls practically 2. Give every trainee 05 minutes lecture inside the cabin 3. Sit with every trainee inside cabin and make them familiar with the controls completely while driving 4. Observe the trainee's mistakes and highlight them to remove mistakes Learners must be able to practice and develop their knowledge and skills relating to Operate Controls in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.	Classroom On site	Machine

Module H: Operate Wheel Loader

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
LU3. Dig, Carry (tram) & Stockpile Materials	Begin the session through an illustrative presentation on how to Dig, Carry (tram) & Stockpile Materials. Ensure that the presentation addresses the following points, including demonstrations of equipment and methods where appropriate: • Describe types of materials • Describe technique to dig, carry and stockpile materials • Describe balancing of back load with bucket load under different conditions • Describe techniques of safe carrying and dumping of materials • Describe economical use of machine (with respect to haul distance) • Describe capacities & capabilities of machine. Prepare either: • A flip chart • A PowerPoint slides • A handout …showing the key topics about Dig, Carry (tram) & Stockpile Materials. Go through all the key topics briefly and then allocate **one key topic** to each group. Learners need to work in their small groups discussing the key topic that has been allocated to their group. Each group should use a sheet of flip chart paper to record **three main points** from their discussions that relate to **their key topic**. After the discussion, begin the feedback session. Ask one group to come to the front of the class with their flipchart. Put up the flipchart where it can be easily seen by other learners. Ask the group to share the main points they have recorded for their key topic for Dig, Carry (tram) & Stockpile	Classroom Onsite	Machines

Module H: Operate Wheel Loader

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
	Materials. Discuss these main points briefly with the whole group. Learners should make additional notes **on the flip chart** to record additional points their group had not identified. Then ask the next group to share their flipchart showing the main points they have recorded for the next key topic. Repeat the discussion process. Continue until you have covered all the key topics. End the group discussion activity with a summary. Photograph or scan all the flipcharts and use these to create a handout to distribute to all learners. Learners must be able to practice and develop their knowledge and skills relating to Dig, Carry (tram) & Stockpile Materials in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		
LU4. Place and Spread Materials	Begin the session through an illustrative presentation. Ensure that the presentation addresses the following points, including demonstrations of equipment and methods where appropriate: • Describe load carrying capacity of the bucket • Describe procedure of loading the bucket efficiently • Describe safety precautions while carrying materials to a short distance Learners need to devise 10 quiz questions with answers based on Replace and Spread Materials. They must make sure their questions cover key topics for Replace and Spread Materials. Issue each learner with 10 blank cards. Each learner should number the cards and write their name on one side with a question about Replace and Spread Materials. On the reverse of the card, they should write an appropriate answer to their question.	Classroom On Site	Machine

Module H: Operate Wheel Loader

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
	For the quiz, arrange learners in two equal teams. Ask one learner to keep score using a suitable score-card. Player 1 for Team A asks one of their questions to Player 1 of Team B, who needs to answer the question. Discuss the answer with the group and ask the group to determine if the answer is correct. Player 1 of Team A then confirms the answer they had devised. (You need to correct answers if the learner's answer was not wholly correct.) The scorekeeper records 1 mark for a correct answer under the appropriate team's score column. Play then passes to Player 1 of Team B, who asks their question to Player 1 of Team A, and so on. Total the scores at the end of the quiz to see which team won. After the quiz, collect learners' question/answer cards and check that answers provided were correct. Return any incorrect answers to learners and ask them to change their answer to the correct one. Show the trainees how to • Load bucket quickly and fully in loose material • Carry loose material to a short distance • Spread material • Maintain smooth pit floor/running surface 1. Give every trainee 10 minutes each to perform above tasks 2. Observe each trainee carefully and observe their mistakes 3. Highlight the mistakes of trainees and guide how to remove it Learners must be able to practice and develop their knowledge and skills relating to Replace and Spread Materials in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support		

Module H: Operate Wheel Loader

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
	their understanding.		
LU5. Backfill Trenches & Excavate	Deliver an illustrated presentation/Demonstration on ways to Backfill Trenches & Excavate. Ensure that the presentation addresses the following points: • Describe the techniques/methods of back filling • Describe safety precautions while backfilling • Place backfill material Prepare either: • A flip chart / A PowerPoint slide / A handout …showing key topics for Backfill Trenches & Excavate. Learners need to work in small groups discussing the key topics. Each group should make notes from their discussions that identify **three main points** that related to **each key topic**. After the discussion, begin the feedback session. Ask one group to share the main points they have recorded for the first key topic for Backfill Trenches & Excavate. Discuss these main points briefly with the whole group. Learners should make additional notes to record additional points their group had not identified. Then ask the next group to share the main points they have recorded for the second key topic. Repeat the discussion process. Continue until you have covered all the key topics. End the group discussion activity with a summary. Demonstrate the following • Place backfill material	Classroom Onsite	Machine

Module H: Operate Wheel Loader

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
	• Manage piles of imported aggregates to minimize waste • Spread materials at work area Excavate soft soil strata 1. Give every trainee 10 minutes each to perform above tasks 2. Observe each trainee carefully and observe their mistakes 3. Highlight the mistakes of trainees and guide how to remove these Learners must be able to practice and develop their knowledge and skills relating to Backfill Trenches & Excavate in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		

Module H: Operate Wheel Loader

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
LU6. Load Trucks	Lead a brain storm discussion on how to Load Trucks, Test and Demonstrate the following: • Describe different site conditions for loading trucks • Describe methods/techniques of loading trucks • Describe coordination/communication to be done between truck driver and Operator • Describe capacities of different dump trucks • Arrange a small loading truck for practical demonstration • Prepare the loading site for loading truck • Maintain the pit floor, level, smooth and clear of obstructions • Fill bucket with loose materials for loading truck • Load smoothly and gently into the trucks • Practically Communicate with the signaler • Perform Loading of truck with Wheel Loader 1. Give every trainee 10 minutes each to perform above tasks 2. Observe each trainee carefully and observe their mistakes 3. Highlight the mistakes of trainees and guide how to remove these Learners must be able to practice and develop their knowledge and skills relating to load trucks in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.	Classroom Onsite	• Machine • Dump Truck • Loading material

Multiple Choice Questions (MCQ's)

Question	**1**	What is the correct machine to use for dumping materials from one place to other?		A	Grader
			Xx	B	Wheel Loader
				C	Excavator
				D	Bull Dozer
Question	**2**	Is the following statement true or false?		A	TRUE
		Wheel Loader has an articulated blade at the front.	Xx	B	FALSE
Question	**3**	Is the following statement true or false?		A	TRUE
		"Wheel loader have tracks and chains"		B	FALSE
Question	**4**	Which is the best machine to use for loading trucks?		A	Grader
			Xx	B	Wheel Loader
				C	Excavator
				D	Bull Dozer

Question	**5**	Which one of the following is not a function of Wheel Loader?		A	Dig, Carry (tram) & Stockpile Materials
				B	Place and Spread materials
				C	Backfill trenches & Excavate
			Xx	D	Create slopes

Frequently Asked Questions (FAQs)

1. What is Competency Based Training (CBT) and how is it different from currently offered trainings in institutes?	Competency-based training (CBT) is an approach to vocational education and training that places emphasis on what a person can do in the workplace as a result of completing a program of training. Compared to conventional programs, the competency-based training is not primarily content based; it rather focuses on the competence requirement of the envisaged job role. The whole qualification refers to certain industry standard criterion and is modularized in nature rather than being course oriented.
2. What is the passing criterion for CBT certificate?	You shall be required to be declared “Competent” in the summative assessment to attain the certificate.
3. What are the entry requirements for this course?	The entry requirement for this course is 8th Grade or equivalent.
4. How can I progress in my educational career after attaining this certificate?	You shall be eligible to take admission in the National Vocational Certificate Level-3 in Leather Products Development Technician (Pattern Maker). You shall be able to progress further to National Vocational Certificate Level-4 in Heavy Construction Machinery Operator Course; and take admission in a level-5, DAE or equivalent course (if applicable). In certain case, you may be required to attain an equivalence certificate from The Inter Board Committee of Chairmen (IBCC).
5. If I have the experience and skills mentioned in the competency standards, do I still need to attend the course to attain this certificate?	You can opt to take part in the Recognition of Prior Learning (RPL) program by contacting the relevant training institute and getting assessed by providing the required evidences.
6. What is the entry requirement for Recognition of Prior Learning program (RPL)?	There is no general entry requirement. The institute shall assess you, identify your competence gaps and offer you courses to cover the gaps; after which you can take up the final assessment.
7. Is there any age restriction for entry in this course or Recognition of Prior Learning program (RPL)?	There are no age restrictions to enter this course or take up the Recognition of Prior Learning program
8. What is the duration of this course?	The duration of the course work is 1,510 hrs. (11 months)
9. What are the class timings?	The classes are normally offered 25 days a month from 08:00am to 01:30pm.

	These may vary according to the practices of certain institutes.
10. What is equivalence of this certificate with other qualifications?	As per the national vocational qualification's framework, the level-4 certificate is equivalent to Matriculation. The equivalence certificate can be obtained from The Inter Board Committee of Chairmen (IBCC).
11. What is the importance of this certificate in National and International job market?	This certificate is based on the nationally standardized and notified competency standards by National Vocational and Technical Training Commission (NAVTTC). These standards are also recognized worldwide as all the standards are coded using international methodology and are accessible to the employers worldwide through NAVTTC website.
12. Which jobs can I get after attaining this certificate? Are there job for this certificate in public sector as well?	You shall be able to take up jobs in the local or overseas construction companies in heavy machinery operator job profile.
13. What are possible career progressions in industry after attaining this certificate?	You shall be able to progress up to the level of supervisor after attaining sufficient experience, knowledge and skills during the job. Attaining additional relevant qualifications may aid your career advancement to even higher levels.
14. Is this certificate recognized by any competent authority in Pakistan?	This certificate is based on the nationally standardized and notified competency standards by National Vocational and Technical Training Commission (NAVTTC). The official certificates shall be awarded by the relevant certificate awarding body.
15. Is on-the-job training mandatory for this certificate? If yes, what is the duration of on-the-job training?	On-the-job training is not a requirement for final / summative assessment of this certificate. However, taking up on-the-job training after or during the course work may add your chances to get a job afterwards.
16. How much salary can I get on job after attaining this certificate?	The minimum wages announced by the Government of Pakistan in 2019 are PKR 17,500. This may vary in subsequent years and different regions of the country. Progressive employers may pay more than the mentioned amount. The heavy Machinery Operator normally earns 20,000 to 25,000 in the start.
17. Are there any alternative certificates which I can take up?	There are some short courses offered by some training institutes on this subject. Some institutes may still be offering conventional certificate courses in the field.
18. What is the teaching language of this course?	The leaching language of this course is Urdu and English.
19. Is it possible to switch to other certificate programs during the	There are some short courses offered by some training institutes on this subject.

course?	Some institutes may still be offering conventional certificate courses in the field.
20. What is the examination / assessment system in this program?	Competency based assessments are organized by training institutes during the course which serve the purpose of assessing the progress and preparedness of each student. Final / summative assessments are organized by the relevant qualification awarding bodies at the end of the certificate program. You shall be required to be declared “Competent” in the summative assessment to attain the certificate.
21. Does this certificate enable me to work as freelancer?	You can start your small business by purchasing your own heavy construction machine and can start earning 50,000 per month. You may need additional skills on entrepreneurship to support your initiative.

National Vocational and Technical Training Commission (NAVTTC)

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