

National Technical and Vocational Qualification Framework

NTVQF

**Competency Based Learning Materials
(CBLMs)**

Maintain Training Equipment and Facility

**National Certificate in CBT&A Methodology
Trainers & Assessors, Level-4**



**Bangladesh Technical Education Board
Agargaon, Sher-E-Bangla Nagar
Dhaka-1207**

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Copyright

This Competency Based Learning Materials on “Maintain Training Equipment and Facility” under the CBT&A Methodology for Trainers & Assessors, Level-4 qualification is developed based on the national competency standard approved by Bangladesh Technical Education Board (BTEB).

This document is to be used as a key reference point by the competency-based learning materials developers, teachers/trainers/assessors as a base on which to build instructional activities.

This document is owned by Bangladesh Technical Education Board (BTEB), developed under the guidance of international expert (TVET and Skills Development Specialist) and National consultant, ILO Country Office for Bangladesh supported by Skills 21 – Empowering Citizens for Inclusive and Sustainable Growth Project, ILO, funded by European Union (EU).

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Preface

Education and training for productive employment is vital for economic and social development in Bangladesh. Technical and Vocational Education and Training (TVET) is a tool for productivity enhancement and poverty reduction. TVET sector ensures quality, relevance and access of skills training which meets industry demand and fulfil the requirements of individual for opting gainful and productive employment.

Competency-based learning materials on “Maintain Training Equipment and Facility” provides overall course guidelines in relation to teaching and learning and act as the key instrument in supporting delivery of standardised formal, non-formal and informal training. It is expected that competency-based learning materials (CBLMs) will serve the purpose of training delivery of different courses maintaining quality as specified in the approved national competency standard for CBT&A Methodology for Trainers & Assessors, Level-4. As it is agreed that any reform in TVET system in Bangladesh should be in line with international trends so as to make graduates from the qualification nationally and internationally competent.

It will be worth noting that the initiatives for development of National Certificate in CBT&A Methodology, Level-4 & Level-5 through review and updating of existing competency standards of trainers & assessors, development of new competency standard for National Certificate for CBT&A Managers and implementers, Level-6 and Competency Based Curriculum development for the above mentioned courses by the Skills 21 – Empowering Citizens for Inclusive and Sustainable Growth Project, ILO. This document is developed by the Standards and Curriculum Development Committee of BTEB under the guidance of International Expert (TVET and Skills Development Specialist) and the National consultant, Skills 21 – Empowering Citizens for Inclusive and Sustainable Growth Project, ILO country Office for Bangladesh.

We appreciate Skills 21 – Empowering Citizens for Inclusive and Sustainable Growth Project, ILO, funded by European Union (EU) for developing competency-based learning materials on “Maintain Training Equipment and Facility” of CBT&A Methodology for Trainers & Assessors, Level-4 qualification under National Technical and Vocational Qualification Framework (NTVQF).

Chairman
Bangladesh Technical Education Board

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Acronyms

BMET	Bureau of Manpower Employment and Training
BTEB	Bangladesh Technical Education Board
CAD	Course Accreditation Document
CBC	Competency Based Curriculum
CBLMs	Competency Based Learning Materials
CBT	Competency Based Training
CBT&A	Competency Based Training and Assessment
CS	Competency Standard
DTE	Directorate of Technical Education
EU	European Union
ILO	International Labour Organization
LCD	Liquid Cristal Display
MOE	Ministry of Education
MOEWOE	Ministry of Expatriate Welfare and Overseas Employment
MOLE	Ministry of Labour and Employment
NEP	National Education Policy
NGOs	Non-Government Organisations
NSDA	National Skills Development Authority
NSDC	National Skills Development Council
NSDP	National Skills Development Policy
NTVQF	National Technical and Vocational Qualification Framework
OSH	Occupational Safety and Health
PCs	Personal Computers
QAMS	Quality Assurance Manuals
RPL	Recognition of Prior Learning
SCDC	Standards and Curriculum Development Committee
TSC	Technical School and College
TTC	Technical Training Centre
TTTC	Technical Teachers Training College
TVET	Technical Vocational Education and Training
VET	Vocational Training Institute
VTI	Vocational Teachers Training Institute

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Overview of the Module

Maintain Training Equipment and Facility

This module comprises two elements (1 to 2), and three (3) learning outcomes derived from the unit of competency TVTENV405A1: Maintain Training Equipment and Facility.

Upon completion of this module, the trainee must be able to:

1. Perform housekeeping activities
2. Maintain training equipment and Tools following the manufacturers manual and organization policies.
3. Document and report maintenance activities according to organizational policies & procedures.

After completion of the training, the trainees will be required to demonstrate their competency through the following performance criteria:

- 1.1 Regular inspections are carried out in the work area according to workplace procedures and standards.
- 1.2 Facilities are maintained in accordance with Occupational Safety and Health (OSH) standards.
- 1.3 Equipment and tools are secured in safe places in accordance with procedures.
- 1.4 Failed or unsafe equipment are removed or repaired in accordance with organizational policies & procedures.
- 1.5 Housekeeping Documents are kept according to organizational procedure.
- 2.1 Maintenance activities, resources and schedule are identified and prepared according to job requirements.
- 2.2 Performance of regular maintenance activities and routine servicing/repair are ensured according to scheduled plan.
- 2.3 Maintenance procedures are followed in accordance with the manufacturers manual and organization policies.
- 2.4 Complex faults or repair requirements are reported for specialist assistance in accordance with organizational procedures.
- 2.5 Maintenance activities are documented and reported according to organizational policies & procedures.

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CONTENTS

This learning package includes the following:

- Characteristics of well-organized workshops.
- 5's Approach in Workshop Keeping.
- Basic First Aid Kit.
- Storage requirements
- Requirement for system of Instruction
- Planning the Facility – a system of competency-based training
- Implications of using learning resources
- Workplace considerations
- Storage considerations
- Workshop environmental factors
- Reporting and documentation process
- Maintain training equipment and tools

PRE-REQUISITE: N/A

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How to use this Competency Based Learning Materials (CBLMs)

The module, “Maintain Training Equipment and Facility” contains training materials and activities for you to complete. These activities may be completed as part of structured classroom activities or you may be required to work at your own pace. These activities will ask you to complete associated learning and practice activities in order to gain knowledge and skills you need to achieve the learning outcomes.

1. Review the **Learning Activity** page to understand the sequence of learning activities you will undergo. This page will serve as your road map towards the achievement of competence.
2. Read the **Information Sheets**. This will give you an understanding of the jobs or tasks you are going to learn how to do. Once you have finished reading the **Information Sheets** complete the questions in the **Self-Check**.
3. **Self-Checks** are found after each **Information Sheet**. **Self-Checks** are designed to help you know how you are progressing. If you are unable to answer the questions in the **Self-Check** you will need to re-read the relevant **Information Sheet**. Once you have completed all the questions check your answers by reading the relevant **Answer Keys** found at the end of this module.
4. Next move on to the **Job Sheets**. **Job Sheets** provide detailed information about *how to do the job* you are being trained in. Some **Job Sheets** will also have a series of **Task Sheets**. These sheets have been designed to introduce you to the job step by step. This is where you will apply the new knowledge you gained by reading the Information Sheets. This is your opportunity to practise the job. You may need to practise the job or activity several times before you become competent.
5. Specification **sheets**, specifying the details of the job to be performed will be provided where appropriate.
6. A review of competency is provided on the last page to help remind if all the required assessment criteria have been met. This record is for your own information and guidance and is not an official record of competency

When working through this Module always be aware of your safety and the safety of others in the training room. Should you require assistance or clarification please consult your trainer or facilitator.

When you have satisfactorily completed all the Jobs and/or Tasks outlined in this module, an assessment event will be scheduled to assess if you have achieved competency in the specified learning outcomes. You will then be ready to move onto the next Unit of Competency or Module

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MODULE CONTENT

UNIT OF COMPETENCY: Maintain Training Equipment and Facility

MODULE TITLE: Maintain Training Equipment and Facility

MODULE DESCRIPTOR: This module discusses the aspects that must be given attention when Maintain Training Equipment and Facility. It shows the requirements for performing housekeeping activities and maintaining training equipment and tools.

NOMINAL DURATION: 15 Hours

LEARNING OUTCOMES:

Upon completion of this module, the trainee must be able to:

1. Perform housekeeping activities
2. Maintain training equipment and Tools following the manufacturers manual and organization policies.
3. Document and report maintenance activities according to organizational policies & procedures.

ASSESSMENT CRITERIA:

1. Regular inspections are carried out in the work area according to workplace procedures and standards.
2. Facilities are maintained in accordance with Occupational Safety and Health (OSH) standards.
3. Equipment and tools are secured in safe places in accordance with procedures.
4. Failed or unsafe equipment are removed or repaired in accordance with organizational policies & procedures.
5. Housekeeping Documents are kept according to organizational procedure.
6. Maintenance activities, resources and schedule are identified and prepared according to job requirements.
7. Performance of regular maintenance activities and routine servicing/repair are ensured according to scheduled plan.
8. Maintenance procedures are followed in accordance with the manufacturers manual and organization policies.
9. Complex faults or repair requirements are reported for specialist assistance in accordance with organizational procedures.
10. Maintenance activities are documented and reported according to organizational policies & procedures.

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LEARNING OUTCOME 1: PERFORM HOUSEKEEPING ACTIVITIES

ASSESSMENT CRITERIA

- 1.1 Regular inspections are carried out in the work area according to workplace procedures and standards.
- 1.2 Facilities are maintained in accordance with Occupational Safety and Health (OSH) standards.
- 1.3 Equipment and tools are secured in safe places in accordance with procedures.
- 1.4 Failed or unsafe equipment are removed or repaired in accordance with organizational policies & procedures.
- 1.5 Housekeeping Documents are kept according to organizational procedure.

CONTENTS:

- Characteristics of well-organized workshops.
- 5's Approach in Workshop Keeping.
- Basic First Aid Kit.
- Storage requirements
- Requirement for system of Instruction
- Housekeeping documents

CONDITIONS:

Trainees must be provided with the following:

- Handouts or reference materials/books on the above stated contents
- PCs/printers or laptops with internet access
- LCD/Digital Projector and Screen
- Microphones
- Bond paper
- Ball pens/pencils and other office supplies and materials
- Communication resources
- Workplace or simulated environment

METHODOLOGIES:

- Lecture/discussion
- Demonstration/application
- Presentation

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ASSESSMENT METHODS:

- Written test
- Demonstration
- Oral Questioning
- Observation with checklist
- Portfolio.

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Learning Experience: 5.1-1

In order to achieve the objectives stated in this learning guide, you must perform the learning steps below. Beside each step are the resources or special instructions you will use to accomplish the corresponding activity.

Learning Steps	Resources specific instructions
1. Student will ask the instructor about the materials to be used.	1. Instructor will provide the learning materials ‘Maintain Training Equipment and Facility’
2. Read the Information sheet/s	3. Information Sheet No: 5.1-1- Perform proper housekeeping. Information no: 2- Maintain Training equipment and tools
3. Complete the Self Checks & Check answer sheets.	3. Self-Check/s Self-Check No: 1- Implement housekeeping activity Self-Check No: 2- Maintain training equipment and tools
4. Read the Job Task sheet and Specification Sheet	4. Job Task Sheet and Specification Sheet Job no: 1- Implement housekeeping activity. Specification 1 - Implement Housekeeping activity. Job No: 2- Maintain training equipment and tool Specification 02 - Maintain training equipment and tools.
5. Complete Activities (if applicable)	5. Task Sheet/s: 5.1-1
6. Perform the Job Task.	6. Job Task sheet/s and Specification Sheet/s Job no: 1- Implement housekeeping activity. Job No: 2- Maintain training equipment and tools. Specification 1 - Implement Housekeeping activity Specification 02 - Maintain training equipment and tools.

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Information Sheet: 5.1-1

Perform Proper Housekeeping activity

Learning Objective:

After reading this Information Sheet, you must be able to perform housekeeping activities within seven hours following OHS practices in their respective work area.

Introduction:

Housekeeping in simple words means maintaining a house on a daily or long term basis or looking after its cleanliness, tidiness, upkeep and smooth running. When you keep your house clean and well maintained, you would also like to make it as beautiful as possible. How do you make sure that everything in the house is in usable condition? None of the objects are broken or chipped and fabrics are not torn. All the fixtures like taps, geysers, electric wiring, bulbs, tubes, fans, plug points, are in good working condition, geysers are not leaking, electric wiring is proper and there is no danger of fire due to short circuiting, and so on.

Thus, the different procedures followed to keep and maintain everything in the house in a good and presentable order, are collectively known as good housekeeping. In other words, we may also say that housekeeping is a process of keeping a place clean, beautiful and well maintained so that it looks and feels pleasant and inviting to all, either - living, visiting or working there.

In our term you will use the housekeeping term for the training workshop we will use in the institutes.

Characteristics of well-organized workshops

What are some of the important characteristics of a well-organized training workshop? If you walked into a workshop, what indicators would tell you that it was well organized?

Here are some indicators that should be evident in a well-planned and organized Tech/Voc training workshop.

- The workshop must be safe to work in, and in the event of an accident, there must be clear emergency procedures.
- In the case of injury or illness, people should know the procedures for the treatment of first aid. First aid treatment should follow currently accepted practices and where available, recognized standards of first aid practice should be referred to for guidance.
- Aisles of travel and safety zones designated by painted lines.
-

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- There should be sufficient space for each person to perform the tasks required without restricting him/herself or others. There should be availability and access to all of the necessary tools, equipment and materials required to perform the tasks.
- The working area must be clean and maintained to ensure ease of access and clean output.
- Poisonous and flammable substances are labeled and stored correctly.
- Tools and other small equipment are stored correctly.
- Clear information is available regarding procedures covering access to the workshop and the security of equipment, materials and personal belongings.
- Appropriate fire extinguishers and hoses are evident and regularly checked and positioned to enable efficient access.
- Electrical leads and connections are labeled, in good condition and regularly checked for safe use.
- Rules and notices regarding smoking in the workshop vicinity are clear and precise.
- Adequate natural or electric lighting and ventilation available to ensure that the working environment is appropriate.
- Receptacles for waste and recycling strategically positioned.
- Safety rules and signs posted in hazardous areas.

The way your workshop is organised will depend on the specialist equipment and consumables of your field.



Figure: Signs and Safety

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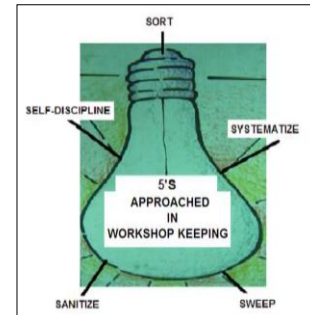
5's Approach in Workshop Keeping

For maintaining proper housekeeping activities 5's system should be followed every workshop or workplace.

5'S is a reference to a list of five Japanese words translated into English. This is an approach of organizing and managing the workplace and work flow with the intent to improve efficiency by eliminating wastes, improving flow of production, reducing process delays.

These words are:

Japanese words	English translation
Seiri	Sort
Seiton	Set in order (systematize)
Seiso	Sweep
Seiket	Standardize (sanitize)
Shitsuke	Sustain (Self-discipline)



Sort	Systematize	Sweep	Sanitize	Self-discipline
Sorting is an action to identify and eliminate all unnecessary items from your work place and dispose them.	Systematizing is an action to arrange or put every necessary item in good order so that they can be easily picked for use. A place for everything Everything is in place	Sweeping is an action to clean your work place thoroughly so that there is no dust on floor, machines and equipment.	Sanitizing is a condition of maintaining high standard of cleaning and workshop organization at all times.	Self-discipline is a condition of training people to follow cleaning disciplines independently.

Safety factors

It is important to develop and follow safe work practices at all times. A training workshop or laboratory must be a safe environment for all who use the facility.

Simple rules can be applied so that all trainees can work safely and confidently.

The following procedures assist in providing a safe working environment:

- regular checks of equipment are made to avoid injury to self and others
- personal protective clothing/equipment is stored according to recognized procedures

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- safety signs/symbols are identified and followed as per instructions
- equipment, machinery and materials are used in accordance with agreed policy and procedures and are displayed on or near the machine
- first aid kits are stocked in consultation with appropriate authorities
- workshop housekeeping is undertaken according to recognized procedures
- mandatory protective clothing is worn, and safety precautions designed for protection when handling chemicals/harmful substances are followed at all times
- hazardous chemicals and solid wastes are disposed of safely in compliance with recognized laws and regulations
- chemicals/harmful substances are stored in accordance with recognized regulations
- perishable goods or foods are stored appropriately
- structural workshop hazards/unsafe working conditions are reported to the appropriate authority
- correct manual handling techniques are followed when carrying, lifting, pushing or pulling heavy objects

Basic first aid kit

- The contents of the kit should be a solid, sturdy dust-proof container which is large enough to adequately house the contents.
- It should be capable of being fixed to a wall or another location and it should not be locked.
- It is usually identified by a large cross.
- Contents of the kit should include:
 - basic first aid notes
 - individually wrapped sterile adhesive dressings
 - sterile eye pads
 - sterile coverings for serious wounds
 - triangular bandages
 - safety pins
 - sterile un-medicated wound dressings - small, medium, large
 - adhesive tape
 - rubber thread or crepe bandages
 - scissors
 - disposable gloves
 - eye baths



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Storage requirements:

Flammable and poisonous materials should be labeled and kept in storage areas that are lockable and have adequate ventilation. The shelf life of the items must be indicated clearly.

Racks in each store should be fixed, and warning signs depicting dangers must be prominently displayed.

Dangerous materials must be stored in accordance with local regulations. We shall consider two categories of materials that require special storage arrangements.

Flammable materials are easily ignited by external sources, such as sparks or flames, and must be stored in an indoor fireproof cabinet or room. Appropriate, portable fire extinguishers must be provided.

Poisonous materials are substances that are liable to cause death or serious injury if swallowed, inhaled or come in contact with the skin. These materials must be kept in restricted areas that are at least three meters from other dangerous materials and away from sources of ignition or heat. Adequate fire extinguishers must be provided in or near the storage area.

Sample Proper Arrangement and storage of tools and equipment

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You can see in the pictures that all tools and equipment are arranged and stored properly in their own racks. Like for example the screw drivers are arranged by type and sizes, hammers, saws, c-clamps, etc. are in their racks.

In addition to storage for dangerous materials, adequate and appropriate storage space must be available for:

- materials/consumables
- tools and equipment
- waste materials

Depending on the size and type of workshop, storage facilities can vary from the very sophisticated and expensive to very basic. The main aspect of storage should be to allow easy storage and retrieval, ease of stock control (if applicable) and security.

Well-organized open shelving within the workshop area may be adequate for certain items, while secured storage may be necessary for others.

Security:

Security is necessary for two main reasons:

- Protection against personal risk.
- Prevention of loss.

Protection against personal risk and liability is the more critical of the two, as those responsible for the safety of others could be held liable for negligence should accidents occur. Commitment to a well-organized workshop and attention to correct storage will lessen the risk of personal injury.

Prevention of loss is also essential as most teachers and instructors are in a position of being accountable for their workshop/laboratories and its equipment. Storage of equipment must be such that it eases this burden of responsibility by making control an efficient and not laborious task.

Access:

Control of access to a workshop/laboratory by students will depend on the area involved. A low personal risk and loss area may allow students to have totally free access without supervision. This is rarely the case, as most technical and vocational areas involve expensive machinery and tools, which often create the potential for personal risk.

In the planning and organization of a workshop/laboratory, one of the issues that need to be considered is that of trainee or student access. If free access is anticipated, this will have significant implication on the type of storage that may then be necessary, from both aspects of security - personal risk and loss.

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Cleanliness:

The workshop environment should be maintained in a clean condition by:

- removing dirt, refuse and waste at least daily from any floor, benches and desks, and from any stairways and passageways
- cleaning windows and skylights so that natural light is not restricted
- cleaning change rooms at least once a day and washing down at least once a week when in use
- Sanitizing any showers and washing facilities each day they are used.

Requirement for system of Instruction

There are many ways of delivering information. It has often been said that the best arrangement is one teacher and one student. In some educational centers it may be necessary for one teacher to be responsible for thirty or more students.

The system of instruction used will determine the type of design and organization of the workshop.

If the system is **teacher-centered**, it is obvious that many in a class of thirty will not gain all of the knowledge expected from such a situation. If the class is smaller, say up to twenty students, there is a good chance that instruction will be considered adequate.

Teacher-centered instruction will normally take place in either a classroom, a workshop, or both. The classroom would be used for theory lessons, tutorials, group discussion and general activities. The room should contain a movable chair and desk for the teacher and movable chairs and desks for the students.

The room should be equipped with audio/visual equipment and a fixed chalkboard or whiteboard and projector screen.

It is suggested that the classroom should allow approximately 2.5 square meters of space per student.

In the workshop where teacher-centered training occurs, each student generally has their own “workspace”, whether this be a kitchen bench with sink and possible shared use of an oven and cook top, or a workbench in a mechanical or manufacturing type workshop with shared use of welding equipment or heavy machinery.

This type of workshop needs to have a suitable area for group demonstration.

Student-centered learning requires a different approach from teacher-based instruction. In this case the responsibility for achieving levels of competence is largely in the hands of the individual student.

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Self-paced learning is a form of student-centered learning, as students progress through the course independently of their peers. The training area must be planned carefully for such an approach.

Training is designed so that students can work individually at their own pace to complete each task in sequential order in much the same way as would be expected on the job. This form of training integrates the theory or background knowledge and the practical skill to which the knowledge applies, which means the workshop must be organized to allow for this movement.

Learners must demonstrate proficiency by completing each set task to pre-determined standards before proceeding to the next stage.

Each student works to a program that is developed to suit his or her learning requirements. Because of varying abilities and some pre-experience, a number of students will complete training in shorter than prescribed time frames; others will take longer.

Training areas for this purpose will have:

- an adequately-equipped workshop where the work tasks are performed
- a separate resource area where the student has access to learning materials in the form of written information, audio-visual programs, computer programs and demonstration, and explanatory discussions with subject teacher(s)

One of the first jobs is to look at the current facilities for teacher-centered learning and plan the changes needed for the facility to cope with students learning at their own rate. Previously the teacher was able to control the learning by having all the students doing the same topic at the same time.

In the student-centered learning environment the students may all be doing a range of topics at the same time; therefore, there is a need to reorganize the workshop and resource center that allows the instructor to manage a whole range of learning activities.

In the cases where the resource center is located in a separate building, there may be a need to incorporate it into the practical area so the student can do the relevant part of theory for the identified part of a skill. Otherwise, the student may have to move between areas/buildings to the resource center to read up/do/re-do some part of the theory.

It is not an efficient process to have a student walking from one building to another.

Work benches and equipment may also need to be rearranged to ensure students are working in a more realistic, safe, industry type workshop environment where they can practice their skills to achieve the required standards. The storage of frequently used equipment must be given consideration when planning the workshop for a system of competency based training, which of course implies a system of self-paced learning.

A storage area for flammable materials is essential and must be flame and spill proof.

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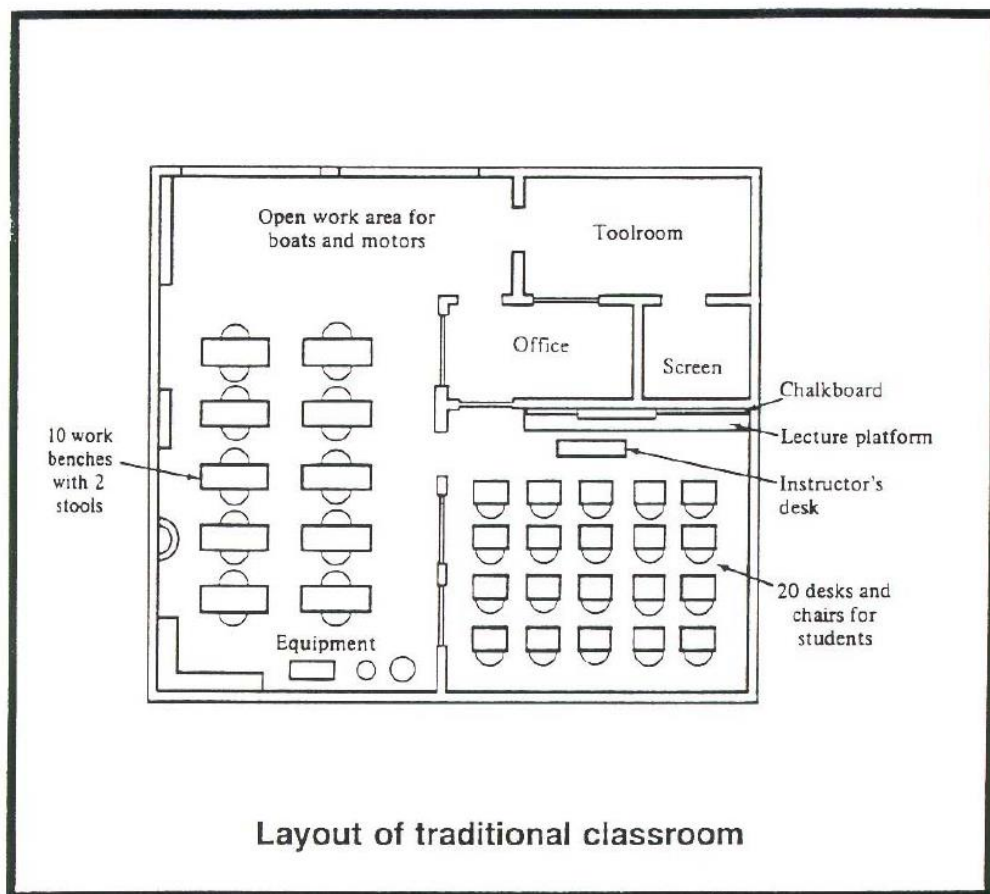
Painting of yellow lines to indicate where people can walk safely in the workshop is an important safety factor.

The use of portable tool boards can save space in the storage area and, being portable, they can be taken to the work site.

Displaying tools and equipment on tool racks and boards makes it easier to check for missing tools at the end of each session.

So, planning the workshop changes is one of the most important steps in a competency-based or self-paced learning environment.

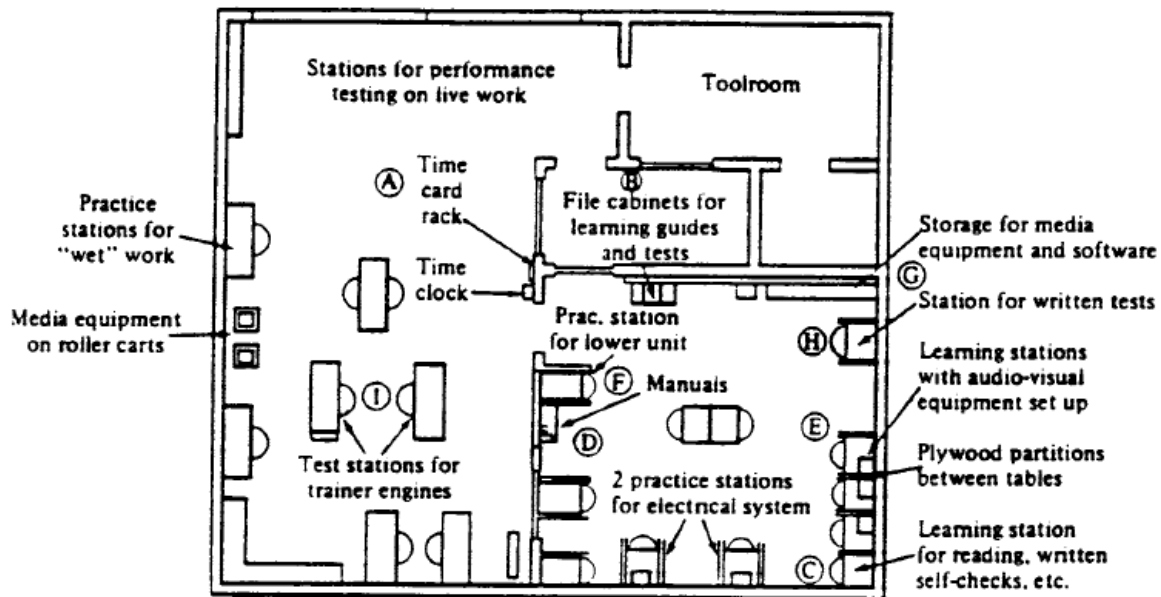
Diagram 1 shows a layout of a traditional classroom that is set up for the teacher-centered learning where the whole class is being given the same lesson/topic.



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Diagram 2 shows the layout for a student-centered or competency-based/self-paced training facility.

Note that the shape and wall structures are the same for both workshops but the relocation of the equipment and resources in diagram 2 has changed dramatically, with very little or no cost for structural changes.



Layout of CBT Classroom

Planning the Facility – a system of competency-based training

The teacher in charge will schedule the operations of the students so that a smooth workflow is maintained. That is, no unnecessary hold-ups caused by a number of students waiting to use the same machinery.

This form of instruction is more cost effective for the following reasons:

- less equipment is required as there is no need for class sets materials can be purchased for students on a needs basis and requires fewer to be kept in stores
- due to their previous experience and ability, some students will use fewer materials in some exercises

It is difficult to put a figure on the individual trainee's space requirements in such a flexible approach to training. Space will depend on the kind of workshop training required for a specific industry.

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Competency-based instruction can be delivered in various ways, from the traditional teacher-centered approach to the non-traditional self-paced or student-centered delivery.

Industry is progressively developing new classifications and job structures, based on competencies identified in standards endorsed by national authorities.

Wherever training occurs, competency-based assessment processes may be required. This may include on or off-the-job assessment.

Modular training made up from self-contained units is preferred.

These can be combined in different ways to meet the specific needs of the learners involved.

The curriculum for competency-based training should be prepared and delivered so as to:

- assess and give credit for competencies held as a result of prior learning (RPL – Recognition of Prior Learning)
- be available in modular form
- provide for articulated training pathways
- link and integrate the content and competencies of the separate components of the training as much as possible, for example, through project work
- develop recognized key competencies including cognitive skills, for example, problem solving
- provide a variety of learning strategies, and free access to them, to motivate learners and to cater for individual differences
- emphasize the process of learning as well as vocational education and training outcomes
- be available to learners in a flexible form including a range of locations, times and modes of delivery
- provide appropriate reports and feedback to learners on competencies acquired
- ensure that assessments are recorded accurately and that they are accessible
- enable the most effective and efficient achievement of competencies
- provide for a review to evaluate the appropriateness of curriculum

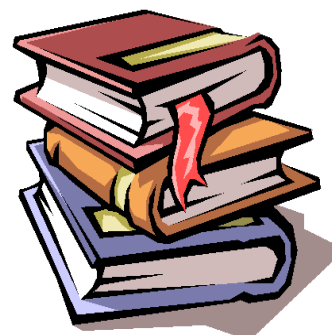
The workshop must be designed to allow these characteristics of CBT to be accommodated.

Implications of using learning resources

General

The type and quantity of learning resources that are used in a workshop or laboratory will also impact on the way the facility will need to be organized.

For example, a traditional classroom of the past, used for teaching theory classes, would possibly have had little more equipment than the student desks or tables, a blackboard, and a few cupboards for storing papers and books. Add to this some display boards and it is probably the type of classroom you may be familiar with from your earlier education.



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Today, we have sophisticated hardware and a variety of learning materials, based on technologies, to aid instruction.

The placement and storage of the equipment and the learning materials, creates a different set of issues that need to be addressed in organizing a workshop or learning facility.

The teaching/learning strategy being practiced will also impact on the organization of the workshop. A teacher-centered or traditional system of training will not involve the issue of “student access” to the same degree as a system based on student-centered learning.

You therefore need to think about the following issues in relation to the type of teaching strategy you employ, and the impact of the field you operate in.

Resources:

A list of the learning resources that might need to be accommodated in a learning facility to train people for employment in the industry sector might include:

- text books
- workshop manuals and technical information
- product information
- instructor developed learning materials
- videos
- Compact Discs (CD) and audio tapes
- product samples
- slides
- slide/tape presentations
- models

Equipment

The equipment required to utilize these resources would include:

- television set
- DVD player
- combination VCR and screen
- audio cassette player
- slide projector
- slide/audio synchronized player
- OHP
- computer/printer



This variety of equipment and resources will require specific storage and consideration of student access when organizing the workshop or training facility.

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Placement and storage:

Once either electrical or electronic equipment is introduced into the training facility, special consideration needs to be given to the conditions for its efficient and effective operation.



The earlier technologies such as basic slide projectors and audiocassette recorders are not as sensitive to the environmental factors of dust and heat. However computers and VCRs are, and being much more costly items, require special consideration as to their placement to allow for their protection as well as student accessibility.

In the heavier of the industry training fields, it has been unusual for instruction to be available to students on video and computers. This is no longer the case, and increasingly, students are gaining their theoretical instruction from videos and simulated experience from computers. To care for such sensitive and expensive equipment, a carefully managed schedule must be implemented, but at the same time allow studen



Paper-based resources:

- Bookshelves and filing cabinets are probably the most effective ways of storing paper-based learning resources.
- Hard cover or substantial publications can be accommodated on open shelving if there is not a dust problem. Glass-door book cabinets may be required if dust is a significant issue.
- Loose leaf or slim type consumable learning materials like Student Worksheets or student workbooks are best stored in filing cabinets.

Slides and slide presentations:

- If students are to use slides, they should be housed in the containers that apply to the playing equipment. For example, slides to be used with a Kodak Carousel should be kept in the carousel, ready to put on the machine. If used on a slide projector, then in the appropriate trays.
- Trays and carousels can be kept in glass-door cupboard the same or similar to that used for videos and tapes.
- It is a viable alternative to transfer slides (and the related narration) to video, as the replay equipment is now less expensive than synchronized slide/tape machines.
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- Slides transferred to video also overcome the problem of missing slides, or a tray or carousel of slides being dropped, with the resulting problem of sorting and replacing them in the container.

Computer discs:

Closed and lockable computer disc storage boxes are the most appropriate way to store these.

- The access students are allowed to these will determine where they are housed in the learning facility.
- Where students are using the computer individually to access learning programmes, it is more efficient to have the programmes loaded on the hard drive and networked to a number of stations.

Lockable room:

The ideal situation for a training facility that requires hands on practical work with machinery, equipment, and instruction provided in some part electronically, could be a lockable, learning resources center alongside or close to the actual workshop or laboratory. This layout would provide:

- storage space for all learning resources
- study desks or corrals for students
- access to computers and replay equipment
- access to all learning resources
- security and control of equipment and resources

In “clean” trade areas (i.e. garment construction, beauty culture, office practice) this may not be necessary and these elements could be incorporated into the actual practical working area.

Workplace considerations

Workspace requirements

If work is to be performed in a safe manner, sufficient space should be allocated. Movement in and around workstations should be unhindered by workshop equipment, materials or other trainees.

Workshop design and layout should enable workstations to be accommodated in the safest and most efficient configuration. Workstations should provide clear space for trainees. The clear space should be exclusive of desks, benches, machinery and any other fittings.

Local regulations will apply to actual space allowable. Work processes and the ergonomics of materials, or the manual handling tasks may require that clear space be increased.

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Where work tasks are largely conducted on workbenches, consideration must be given to allow adequate space for their efficient use. Environmental problems such as heat or noise may also require increases to the recommended size. Aisles, passageways and access to cupboards or doors should be in addition to the calculated clear workstation space.

Location of equipment

The following rules apply to the safe and efficient location of fixed workshop machinery:

1. Adequate distance exists between machinery, and safety switches operate effectively on all machinery.
2. Safety barriers are correctly placed and machine guards are in proper working order on all machinery.
3. Rotating machinery is properly guarded and machinery stop buttons are adequate and in proper working order.
4. Fume and dust extraction facilities are adequate and in proper working order for the size of the workshop.
5. Adequate lighting is provided in booths or compartments where work is performed.

Non-functional tools and equipment

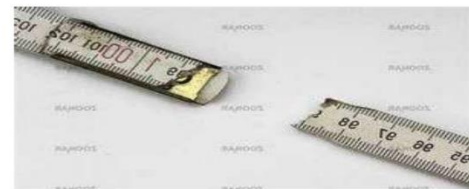


Non-functional tools and equipment are those that are not able to perform its regular function because of impaired and damage part. These item should be isolate and replace in 'Non-functional tools and equipment' box/self. Examples of these are the following:

Functional tools and equipment

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Functional tools and equipment are those that are in good condition and can perform its regular functions. These item should be isolate and place in ‘Functional tools and equipment’ box/self. Examples of these are the following:



A broken/cut foot rule



Electrical equipment with damage cord

Fixed machinery and portable or hand-held power tools must be operated in accordance with established workshop policy procedures and machinery manufacturer’s recommendations. Any faults identified in operation must be reported to the appropriate authority.

Arrangements may be made with suppliers and/or machinery manufacturers to place items of machinery or equipment in the training workshop for demonstration purposes. This is often a good opportunity to gain experience with new, currently-used industrial equipment. Depending on the arrangement, the placement may be on a permanent basis, but most likely a temporary one.

Clear instructions for the use of demonstration equipment must be established, for instance, is it just for demonstration, or can trainees, under supervision, have “hands-on” experience? Signed letters of agreement are essential to protect the rights of all concerned.

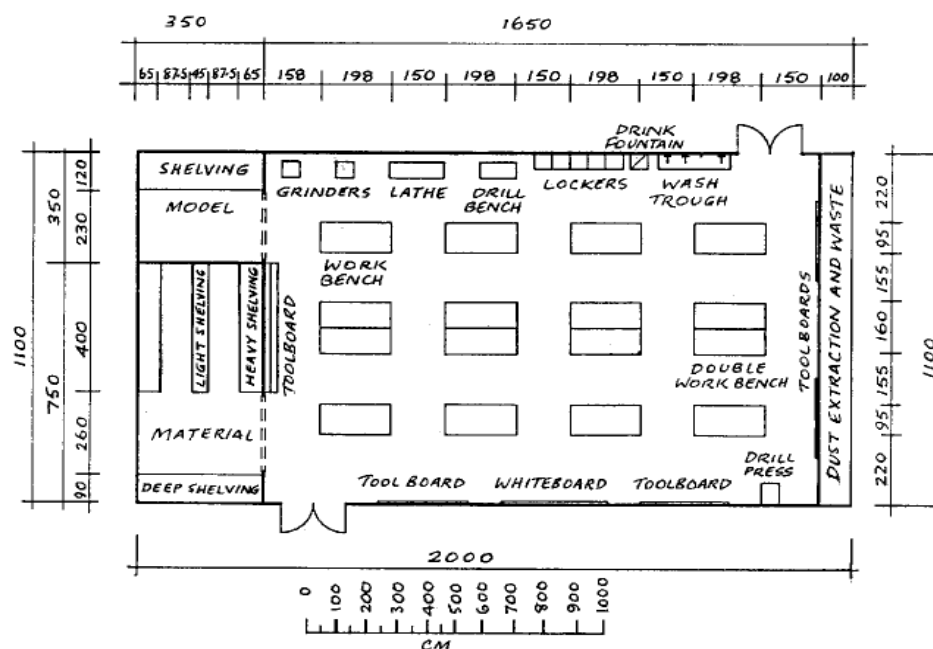
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Workshop layout

Here are samples floor plans of two workshops.

Layout 1 is a general workshop area with workbenches for teaching trade practices to a maximum of 15 trainees.

The workshop includes dust extraction, a waste zone, and stores for materials and models/projects. Space allocation for each trainee is 146 square meters.



LAYOUT 1 GENERAL WORKSHOP FOR 15 STUDENTS

Layout 2 is a workshop area with workbenches for teaching trade practices in the use of power tools to a maximum of 15 trainees.

Space allocation for each trainee is 6.3 square meters.

Please note: all measurements are metric.

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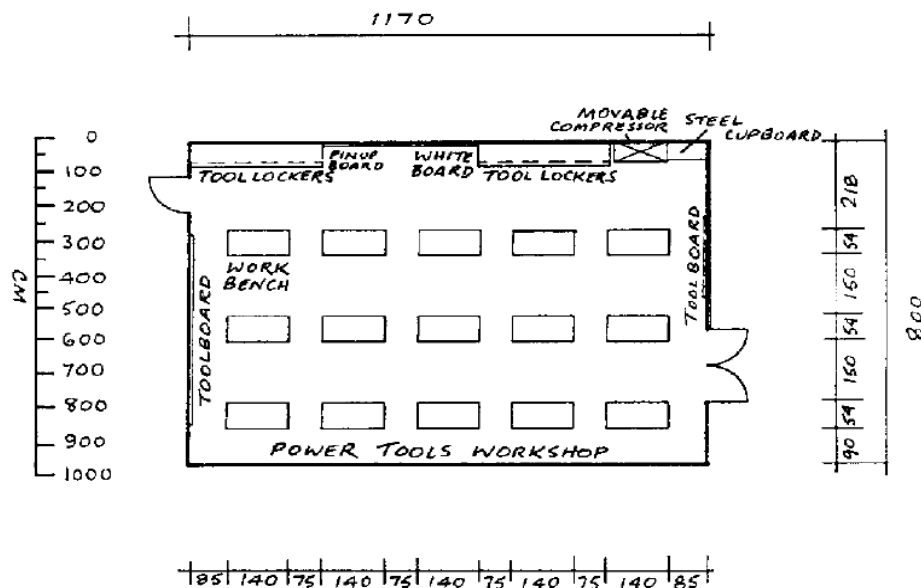


Figure: Layout 02

Factors to consider in laying out a shop

- Floor plan of the building or shop (available space)
- Amount and source of light (natural and artificial)
- Ventilation
- Electrical outlet and power supply
- Machine placement (space allowed and accessibility)
- Production work organization sequence
- Wash rack and restroom facilities
- Shop departments (space for each)
- Location of chalkboard, bulletin boards
- Instructor's desk, filing cabinets
- Assembly space
- Location of classroom within shop
- Demonstration bench and facilities
- Arrangement of reference material
- Time keeping facilities
- Locker facilities
- Storage room and facilities (arrangement and location)
- Scrap bins
- Lanes of travel
- Pillars
- Partitions

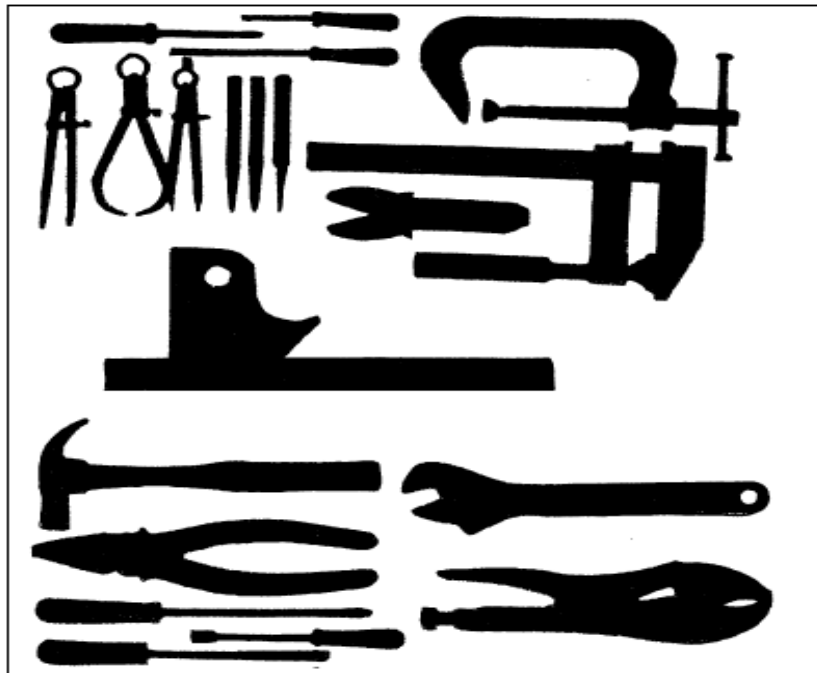
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- Future expansion
- Shop hazards
- Student capacity required
- First aid supplies
- Project storage, lockers

Storage considerations

Storage considerations must take into account the placement of workshop items so that they are easily and accurately identified. For example, a system that has been used for many years in industry and in home workshops is the shadow board.

This is a fixed board situated along the wall of the workshop on which the shapes of individual hand tools are clearly shown. Hooks or pegs enable the tools to be hung so that they fit their “shadows”.



The shadow board enables you to do a quick check on which tools are in use and whether all tools in the kit have been returned at the end of training...

When heavy items of equipment or collections of tools must be transported to and from the storage and work area, it would be practical and sensible to use mechanical aids, such as trolleys or tool carts. Such assistance can lessen problems that can occur in the event of incorrect manual handling techniques.

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When planning the workshop/laboratory, provision needs to be made for the storage of the above items of equipment (tool boards, equipment trolleys, ladders, stools, etc).

A secure, permanent, clearly marked storage place for each item allows for easy checking of missing equipment at the end of each session as well as allowing for smooth running of the workshop throughout the learning activity time.

A well-organized storage facility may require the appointment of a stores manager to supervise the identification, selection and return of tools, equipment and materials. The manager's task would also include continuing maintenance of the stores in the form of repairs and replacement.

However, in small departments or training centers it is not likely that this situation will be the norm. It will therefore be the responsibility of the individual instructor or teacher to monitor these issues. A well-organized workshop/laboratory would have a system in place that allows the teacher to ensure that equipment is maintained or replaced.

A stores area will normally be equipped with racks so that space can be efficiently utilized. Storage racks must be structurally sound and designed for the maximum load to which they will be subjected.

Racks on which dangerous materials are placed must be constructed using compatible materials.

If the workshop storage section is situated on a mezzanine floor, that is, a half-storey placed between the ground floor of the building and the second storey, the following considerations should be observed:

- security arrangements are maintained
- access and egress routes are kept clear
- alternative adequate procedures are available for the movement of heavy items, other than up and down stairways
- safe procedures are followed for the movement of dangerous materials

Workshop environmental factors

Most manufacturing enterprises have long since recognized the relationship between productivity and employee wellbeing. Supervisors or managers are becoming increasingly aware of the need of the comfort of the trainees to assist them derive the greatest benefit from their training experience.

Temperature, ventilation and lighting are three elements of the environment that can be controlled by artificial means, but if this capacity does not exist, then steps need to be taken to ensure the comfort (and hence, motivation) of the student, using whatever natural means exist.

Temperature:

In an ideal situation, the workshop environment would be maintained within a temperature range to protect trainees from thermal stress.

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Ventilation and mechanical cooling systems should be arranged to counteract excessive heat. On the other hand, workshops located in non-tropical areas should be capable of being heated during cold weather.

A temperature of at least 15 degrees Celsius is recommended where manual work is performed.

If a capacity does not exist to control the temperature and ventilation by air conditioning or heating, then the following steps should be employed:

- ensure enough windows and doors are fitted to take advantage of any cooler, outside air;
- insulate ceilings/roof where appropriate;
- use external awnings to protect window;

Lighting

Sufficient lighting needs where people work should be sufficient to allow the work to be performed safely and without eyestrain. Individual or task lights improve the intensity of light in areas where natural or general artificial lighting is insufficient.

Almost all jobs require us to use our eyes.

Good lighting means:

- being able to see what needs to be seen
- doing this without affecting health and safety

When planning a workshop factors that contribute to good lighting must be considered.

There are three main steps:

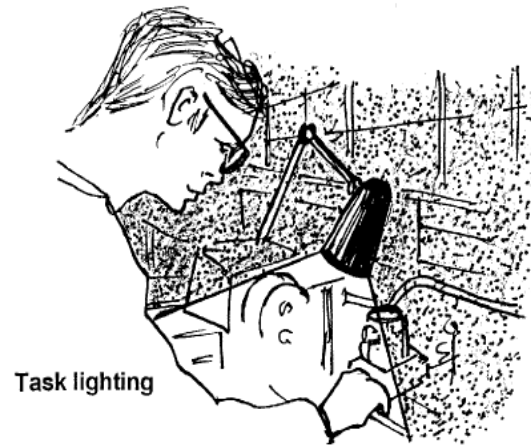
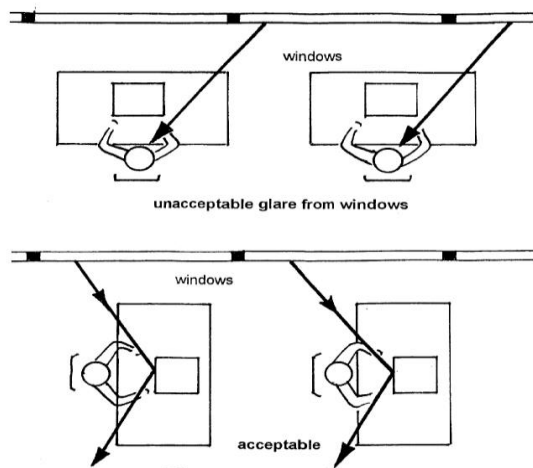
1. Design the workshop to avoid lighting problems.
 - Make maximum use of natural light by adhering to the following accepted principles:
 - Overhead windows are preferable to wall windows.
 - The vertical dimension of outside wall windows should be such that the top or head is within 15 centimetres from the ceiling and the bottom or sill at or above eye level.
 - Glass area should equal 30% of the floor area and should never be less than 16%
 - Where there is only one window wall, room widths should be no more than two times the height of the windows.
 - Skylights and other kinds of overhead windows may require the installation of tinted, refracting, or diffusing glass in order to obtain proper distribution of light.
 - Windows should be shielded in order to meet changing daylight conditions.
 - Plan specific lighting installations to achieve required illumination levels to control glare and shadows, and to satisfy health and safety requirements.
2. Identify and assess lighting problems and difficulties in the workshop.

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- Assess factors such as the kind of lighting, the work being done and the overall workshop environment.
- Assess lighting levels required and minimize glare, reflections and shadows.

3. Identify solutions to lighting problems.

- Investigate control measures to lighting problems.
- Alter the lighting system by:
 - lowering or raising the lights
 - changing the position of the lights
 - increasing or decreasing the number of lights



Disposal of toxic waste:

- It is essential, for personal and general safety reasons, to positively identify any toxic materials that must be disposed of.
- Identification enables the use of the correct procedure for disposal. Procedures for disposal of waste have implications for the design and organization of the workshop.
- Specific recommendations for disposal should be available and must be followed for environmental reasons.
- Do not dispose of toxic liquids into sewerage systems.
- Local laws must be checked for any special precautions for disposal of solid waste containers and closures in a landfill.
- Local authorities should be contacted to determine their provision for collection of wastes and location of depots.
- If incineration is recommended, conditions must be observed, particularly where there is possibility of emission of hazardous fumes or smoke.
- Safe transport of toxic substances must meet local regulatory requirements.
- Recommendations for neutralizing spills must be observed.
- Procedures should include:
 - steps to be taken to minimize spills or leaks
 - methods for cleaning up spills and leaks
 - precautions to be observed by clean-up personnel:
 - removal of any ignition sources
 - protective clothing and equipment
 - any special equipment required for the clean-up
 - Chemical manufacturers normally provide information about their products that include factors such as biodegradability or persistence in soil and water.

Can any waste products from the workshop be recycled? That is, can waste be made productive? Many waste materials are regularly collected, treated and processed to be used repeatedly. Such actions are followed worldwide.

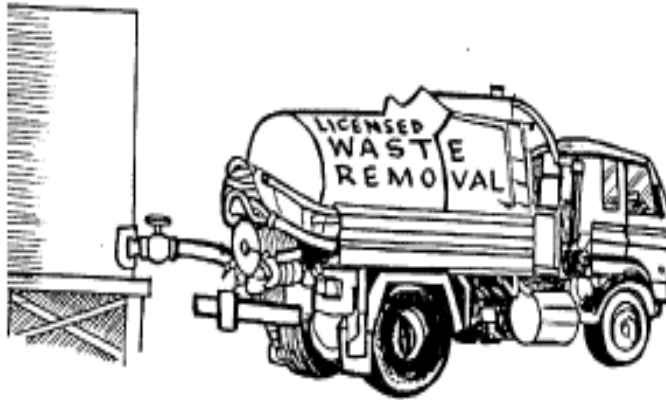
Recycling of paper products is a good example: you may be using a recycled paper product at this moment.

Examples of materials that can be recycled include:

- glass
- plastic
- metal
- paper - newsprint
- other paper and cardboard
- batteries

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Any workshop waste materials that can be recycled in accordance with local provisions can be stored in suitable receptacles, bins or flexible containers ready for collection.



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Self-Check No: 5.1-1

Implement housekeeping activity

1. What is housekeeping?
2. What do you mean by 5S of housekeeping?
3. What Simple rules can be applied so that all trainees can work safely and confidently?
4. What contents should be included in the first aid kit?
5. Why is it necessary to adequate and appropriate storage space to storage for dangerous materials?
6. What are the ultimate goals of the maintenance department?
7. What does housekeeping cover?
8. What kind of rules should be applied to safe efficient location of fixed workshop machinery?
9. Why Security is necessary for the workplace?
10. What is 'Non-functional tools and equipment'?

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Answer Key No: 5.1-1

Implement housekeeping activity

1. What is housekeeping?

Answer: Housekeeping in simple words means maintaining a house on a daily or long term basis or looking after its cleanliness, tidiness, upkeep and smooth running.

In other words, we may also say that housekeeping is a process of keeping a place clean, beautiful and well maintained so that it looks and feels pleasant and inviting to all, either - living, visiting or working there.

2. What do you mean by 5S of housekeeping?

Answer: 5'S housekeeping is a reference to a list of five Japanese words translated into English. This is an approach of organizing and managing the workplace and work flow with the intent to improve efficiency by eliminating wastes, improving flow of production, reducing process delays.

3. What Simple rules can be applied so that all trainees can work safely and confidently?

Answer: The following procedures assist in providing a safe working environment:

- regular checks of equipment are made to avoid injury to self and others
- personal protective clothing/equipment is stored according to recognized procedures
- safety signs/symbols are identified and followed as per instructions
- equipment, machinery and materials are used in accordance with agreed policy and procedures and are displayed on or near the machine
- first aid kits are stocked in consultation with appropriate authorities
- workshop housekeeping is undertaken according to recognized procedures
- mandatory protective clothing is worn, and safety precautions designed for protection when handling chemicals/harmful substances are followed at all times
- hazardous chemicals and solid wastes are disposed of safely in compliance with recognized laws and regulations
- chemicals/harmful substances are stored in accordance with recognized regulations
- perishable goods or foods are stored appropriately
- structural workshop hazards/unsafe working conditions are reported to the appropriate authority
- correct manual handling techniques are followed when carrying, lifting, pushing or pulling heavy objects

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4. What contents should be included in the first aid kit?

Answer: Contents of the kit should include:

- basic first aid notes
- individually wrapped sterile adhesive dressings
- sterile eye pads
- sterile coverings for serious wounds
- triangular bandages
- safety pins
- sterile un-medicated wound dressings - small, medium, large
- adhesive tape
- rubber thread or crepe bandages
- scissors
- disposable gloves
- eye baths

5. Why is it necessary to adequate and appropriate storage space to storage for dangerous materials?

Answer: To storage for dangerous materials, adequate and appropriate storage space must be available for:

- materials/consumables
- tools and equipment
- waste materials

6. What are the ultimate goals of the maintenance department?

Answer: The ultimate goals of the maintenance department are-

- a) Optimize the use of every dollar spent in achieving the assigned tasks/mission.
- b) the health and safety of the public and employees
- c) housekeeping and keeping the general appearance of the facilities presentable

7. What housekeeping covers?

Answer: Housekeeping covers the following-

- a) Repair or replacing parts to restore a piece of equipment to full operating condition, and to alleviate undesirable conditions found during periodic maintenance or breakdown
- b) Construction and rehabilitation of building, modifying, and restoring structures;

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8. What kind of rules should be apply to safe efficient location of fixed workshop machinery?

Answer: The following rules apply to the safe and efficient location of fixed workshop machinery:

- Adequate distance exists between machinery, and safety switches operate effectively on all machinery.
- Safety barriers are correctly placed and machine guards are in proper working order on all machinery.
- Rotating machinery is properly guarded and machinery stop buttons are adequate and in proper working order.
- Fume and dust extraction facilities are adequate and in proper working order for the size of the workshop.
- Adequate lighting is provided in booths or compartments where work is performed.

9. Why Security is necessary for the workplace?

Answer: Security is necessary for two main reasons:

- Protection against personal risk.
- Prevention of loss.

10. How you can clean your workplace?

Answer: The workshop environment should be maintained in a clean condition by:

- removing dirt, refuse and waste at least daily from any floor, benches and desks, and from any stairways and passageways
- cleaning windows and skylights so that natural light is not restricted
- cleaning change rooms at least once a day and washing down at least once a week when in use
- Sanitizing any showers and washing facilities each day they are used.

11. What is ‘Non-functional tools and equipment’?

Non-functional tools and equipment are those that are not able to perform its regular function because of impaired and damage part. These item should be isolate and replace in ‘Non-functional tools and equipment’ box/self. Examples of these are the following:

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Job sheet no: 5.1-1

Implement housekeeping activity



Hard Hats/ Helmets

Gloves



Goggle

Mask

Work boots

Pants

Task sheet 1.1- Maintain housekeeping activity checklist.

Task sheet 1.2 – Maintain proper storage methods.

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Task sheet 5.1-1

Maintain housekeeping activity checklist

See the specification sheet and fill up the housekeeping activity checklist accordingly.

Specification 1.1 - Implement Housekeeping activity

Housekeeping activity checklist for training workshop

1	LAYOUT	Y	N	NA	Comments/Hazards	Actions: (include person responsible and target completion date)
1.1	Area is tidy and well kept					
1.2	Adequate storage area provided					
1.3	Floor is free of obstructions and not-slippery					
1.4	Any opening in the floor are guarded or covered					
1.5	Walkways clearly marked and guarded if necessary					
2	ENVIRONMENT	Y	N	NA	Comments/Hazards	Actions: (include person responsible and target completion date)
2.1	Lighting is adequate					

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2.2	Lighting covers and fittings are secure					
2.3	Area is free from odours					
2.4	Noise level is acceptable/adequately controlled					
2.5	Ventilation is adequate					
2.6	Recycling posters and information displayed					
3	EMERGENCY PROCEDURES	Y	N	NA	Comments/Hazards	Actions: (include person responsible and target completion date)
3.1	Written procedures posted					
3.2	Extinguisher of appropriate type easily accessible					
3.3	Emergency and hazard signage is clearly visible					
4	FIRST AID FACILITIES	Y	N	NA	Comments/Hazards	Actions: (include person responsible and target completion date)
4.1	Kit kept and marked in accessible area.					

4.2	Kit is stocked and contents are in-date					
5	GENERAL FACILITIES	Y	N	NA	Comments/Hazards	Actions: (include person responsible and target completion date)
5.1	Cleaning area is accessible and functional					

6	ELECTRICAL SAFETY	Y	N	NA	Comments/Hazards	Actions: (include person responsible and target completion date)
6.1	Power extension board/Multi-plug in good condition					
6.2	Power leads are off the floor or placed away from walkways					
6.3	Faulty equipment is removed from service					
7	WASTE DISPOSAL	Y	N	NA	Comments/Hazards	Actions: (include person responsible and target completion date)
7.1	Waste containers are provided and labeled					
7.2	Waste is segregated and stored appropriately away from drains					
8	PPE	Y	N	NA	Comments/Hazards	Actions: (include person responsible and target completion date)
8.1	Required PPE available for all staff and students					
8.2	Correctly stored					

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8.3	Well maintained and in good condition					
8.4	Signage of PPE requirements displayed					

Comment (If any)

Task Sheet 5.1-2

Maintain proper storage methods.

In the first column, list the kinds of tools, machinery, equipment and materials used in your industry. In the second column, list the preferred storage method

Tools, machinery, equipment and materials	Preferred storage method

Tools and equipment

- Stationeries

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LEARNING OUTCOME 2: MAINTAIN TRAINING EQUIPMENT AND TOOLS FOLLOWING THE MANUFACTURERS MANUAL AND ORGANIZATION POLICIES.

ASSESSMENT CRITERIA

- 2.1 Maintenance activities, resources and schedule are identified and prepared according to job requirements.
- 2.2 Performance of regular maintenance activities and routine servicing/repair are ensured according to scheduled plan.
- 2.3 Maintenance procedures are followed in accordance with the manufacturers manual and organization policies.

CONTENTS:

- Planning the Facility – a system of competency-based training
- Implications of using learning resources
- Workplace considerations
- Storage considerations
- Workshop environmental factors

CONDITIONS:

Trainees must be provided with the following:

- Handouts or reference materials/books on the above stated contents
- PCs/printers or laptops with internet access
- LCD/Digital Projector and Screen
- Microphones
- Bond paper
- Ball pens/pencils and other office supplies and materials
- Communication resources
- Workplace or simulated environment

METHODOLOGIES:

- Lecture/discussion
- Demonstration/application
- Presentation

ASSESSMENT METHODS:

- Written test
- Demonstration
- Oral Questioning
- Observation with checklist
- Portfolio.

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Learning Experience: 5.2-1

In order to achieve the objectives stated in this learning guide, you must perform the learning steps below. Beside each step are the resources or special instructions you will use to accomplish the corresponding activity.

Learning Steps	Resources specific instructions
1 Student will ask the instructor about the materials to be used.	1 Instructor will provide the learning materials ‘Maintain Training Equipment and Facility’
2 Read the Information sheet/s	- Information Sheet No: 5.2-1- Perform proper housekeeping. - Information no: 5.2.1- Maintain Training equipment and tools
3. Complete the Self Checks & Check answer sheets.	3. Self-Check/s Self-Check No: 5.2-1- Maintain training equipment and tools
4. Read the Job Task sheet and Specification Sheet	4. Job Task Sheet and Specification Sheet
5. Complete Activities (if applicable)	5. Activity Sheet/s: Task sheet 5.1-1- Maintain housekeeping activity checklist. Task sheet 5.1-2 – Maintain proper storage methods.
6. Perform the Job Task.	6. Job Task sheet/s and Specification Sheet/s Job no: 1- Implement housekeeping activity. Job No: 2- Maintain training equipment and tools. Specification 1 - Implement Housekeeping activity Specification 02 - Maintain training equipment and tools.

Note: If you have multiple Information sheets and Job Sheets repeat the above Learning Steps 2 to 6 for each job.

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Information sheet: 5.2-1

Maintain Training equipment and tools

Learning outcome: After completing this module, trainees must be able to Maintain Training equipment and tools within eight hours following OHS practices in their respective work area.

Tools & equipment

A tool is a device that can be used to produce an item or accomplish a task, but that is not consumed in the process. It can be considered as extension of the human hand thus increasing speed, power, and accuracy and on the other hands equipment includes any machine powered by electricity

Classification of Tools and Equipment.

Tools & equipment can be classifying as follows-

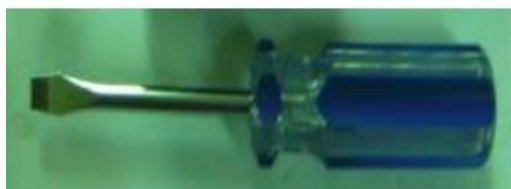
1. **Hand tools**- are tools manipulated by hands without using electrical energy such as: Puller, Hacksaw, Pull-push Rule, Pliers, Hammer etc.
2. **Machine/Power tools** -are tools manipulated by our hands and with the use of electrical energy such as: electric drill, grinding wheels, vacuum cleaner and others.
3. **Pneumatic tools** are -tools or instruments activated by air pressure. Pneumatic tools are designed around three basic devices: the air cylinder, the vane motor, and the sprayer.

Hand tools

Different types of hand tools are used in a workshop; such as - screwdrivers, hammers, pliers, wrenches and pullers.

1. **Screwdrivers** are used to drive, or turn screws. The common type has a single flat blade for driving screws with slotted heads. The other type has the cross slotted head.

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Standard screw driver



Philips Screw Driver

1. **Hammers** are mostly used tools in the shop. They should be gripped at the end of the handle.

2. **Pliers** are specified types of adjustable wrenches. The two legs move on a pivot so that items of various sizes can be gripped.



Combination pliers



Long Nose Pliers

3. **Wrenches** are used to turn screws, nuts and bolts with hexagonal heads. —Hexagonal means six-sided. A variety of wrenches are used in the shop.



Wire Stripper



Portable Electric Drill

4. **Pullers** are used to remove gears and hubs from shafts, bushings from blind holes, and cylinders' liners from the engine blocks.

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Machine/Power tools are tools manipulated by our hands and with the use of electrical energy such as: electric drill, grinding wheels, vacuum cleaner and others.

3. Pneumatic tools are tools or instruments activated by air pressure. Pneumatic tools are designed around three basic devices: the *air cylinder*, the *vane motor*, and the *sprayer*.

Machine/Power Tools

1. **Electric drill** has an electric motor that drives a chuck. The chuck has jaws that can be opened and then closed to grip a drill bit.



2. **Grinding tool** can be either bench-mounted or installed on a pedestal. They may either have a grinding wheel, v-flap wheel, or two grinding wheels.



3. **Vacuum cleaner** is used for cleaning the floor and car interiors after service.



Pneumatic tools

1. **Pneumatic Torque Wrench.** This wrench uses compressed air to quickly and powerfully turn nuts, bolts, and other objects.



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2. **Air chisel** uses reciprocating motion to drive a cutting hammering tool. An air hammer drives a chisel to cut off a nut that has frozen to a stud. It can be used with a variety of tools-cutters and punches to do many jobs.



3. **Air drill** is lighter than a comparable electric drill. Repeatedly stalling or overloading does not damage or overheat the air drill.

4. **Air racket** uses the sockets and attachments from a standard socket set.



5. **Pneumatic floor jack** uses compressed air to flow into the jack cylinder and causes the ram to extend and raise the vehicle.



Maintenance

Before we prepare the maintenance program, it is good idea to make sure that we all have the same idea on what maintenance means.

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Maintenance is performing the routine actions which keep the device in working order, to keep in good condition, to preserve and protect the device.

The European Federation of National Maintenance Societies defines maintenance as:

“All actions which have as an objective to retain an item in or restore it to, a state in which it can perform the required function. The actions include the combination of all technical and corresponding administrative, managerial and supervision actions”.

Repair is fixing any sort of mechanical or electrical device should it become out of order or broken: "fix it when it breaks.

Types of maintenance:

- Preventive Maintenance- is conducted to keep equipment working or extend the life of the equipment.
- Corrective Maintenance- is sometimes called “repair”, is conducted to get equipment working.

Preventive Maintenance is preventing trouble from arising; continue in good operating condition. This is done through;

- The care and servicing by personnel for the purpose of maintaining equipment and facilities in satisfactory operating condition by providing for systematic inspection, detection, and correction of incipient failures either before they occur or before they develop into major defects.
- Maintenance, including tests. Measurements, adjustments, and parts replacement, performed specifically to prevent faults from occurring.

While preventive maintenance is generally considered to be worthwhile, it is important to note that there are risks such as equipment failure or human error involved when performing PM. just as in any maintenance operation.

"Proactive Maintenance is the Mission"

- Adopting a proactive approach to maintenance will improve maintenance effectiveness dramatically and more rapidly than instituting an aggressive program of maintenance effectiveness improvement within the confines of the organizational and cultural environment of an existing, predominantly maintenance program.

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Maintenance program

- Maintenance Program is a comprehensive list of maintenance and its incidence. This would include all the maintenance activities to be undertaken, manpower needed, maintenance methods to be used, all the materials and supplies needed for the maintenance and the costs involved in the maintenance.
- **Maintenance Schedule** is a list allocating specific maintenance of an area, equipment and tools to a specific period .The Maintenance schedule is just a part of the Maintenance Program



Quality Management Cycle (QMC)

- In preparing the Maintenance program, it would be best if we will adhere to the Quality Management cycle.



Quality management is a method for ensuring that all the activities necessary to design, develop and implement a product or service are effective and efficient with respect to system and performance.

- **Plan:** Design or revise business process components to improve results.
- **Do:** Implement the plan and measure its performance.
- **Check:** Assess the measurements and report the results to decision makers.
- **Act:** Decide on changes needed to improve the process. The consolidation phase enables the organization to take stock of what has been taking place and to ensure made to processes that require documentation (both to allow processes to ' repeatable and to facilitate recognition of the achievement of some form of quality standard).

QMC in the maintenance program

The philosophy of the Quality Management Cycle can be applied in the Maintenance Program of an organization. The first step of the Quality Management cycle in maintenance is to PLAN by preparing all the details of the maintenance program Then DO, wherein the organization implements the methods and strategies of maintenance based on the maintenance schedule. Then

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CHECK, here the organization regular inspects equipment to determine if the required maintenance procedures are conducted. Finally ACT. here the organization acts on the result of the inspection conducted

Why maintain your equipment?

General Objective: To maintain the optimum condition of physical facilities at acceptable levels and minimum cost to satisfy the expected demands of TVET programs and activities.

Specific Objectives

1. To extend the useful life of physical facilities
2. To assure the operational readiness of installed equipment and maximum possible return on investments.
3. To properly discard hazardous wastes
4. To ensure the safety of personnel using the facilities, physical properties and the environment

What can we gain from maintaining our facilities?

- Ensured SAFE environment
- Improved MORALE of human resources
- Reduced operational COST
- Increased PRODUCTION
- Prolonged LIFE facilities.
- Prompt delivery of services and products.

WHO?

- Who will manage the activities?
- Who will monitor and evaluate the operations?
- Who will prepare the maintenance schedule?
- Who will implement the program"
- Who will keep the records?
- Who will conduct inspection?
- Who will certify and accept the work'?
- Who will prepare the reports?

What. Where, When?

- What routine actions must be done to keep the device in working order?
- Where is the maintenance activity to be carried out?
- When do you perform the maintenance activities?

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How to maintain?

The question on how do we implement the maintenance program will center on the 5Ms which are as follows;

- Manpower
- Money (Financial Resources)
- Methods and systems
- Machines (Facilities)
- Materials and Supplies.

Overall, the combination of Standards, Methods and Strategies are elements of an integrated Planned Maintenance System.

Sample equipment maintenance schedule

In order to perform the maintenance of specific equipment, a Maintenance Schedule is drawn to guide the personnel in the proper methods and system One best source of the list of maintenance activities of an equipment is its manufacturer's manual In the absence of it, the plan can be derived from the known maintenance methods of the equipment.

Below is a sample Maintenance Schedule for a Desk top computer in Practical Area/Computer Lab in a Training Center.

Template: EQUIPMENT MAINTENANCE SCHEDULE																
Equipment Type		Desktop Computer														
Property Code/ Number		Computer 1 i 1001A														
Location		Practical Work Area I Computer Laboratory														
ACTIVITIES	MANPOWER	Schedule for the Month of														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Clean the computer unit	IT Personnel	x						x							X	
2. Check computer for	IT Personnel							x							X	
3 Clean computer peripherals	IT Personnel	x		x		x		x		x		x		X		
4 Check electric and computer connections	IT Personnel							x							X	

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5 Turn off unit when not in use or at the end of the day.	IT Personnel	x	x	x	x	X	x	x	X	X	X	x	X	x	tr	
---	--------------	---	---	---	---	---	---	---	---	---	---	---	---	---	----	--

Check

To determine if the maintenance program is implemented according to what is planned, an assessment must be done. The results of the assessment will then be recorded and reported to the proper authorities for immediate action.

Regular inspections are conducted to assure that the maintenance activities are done on the date and time it was planned and that the performance levels adhered to the defined standards.

Sample equipment inspection checklist

A sample Maintenance Inspection Checklist is included here. Please check your hand outs for a template of Maintenance Check List. You may note that this checklist pertains to the same equipment with the Maintenance Schedule (see Sample above). This checklist will confirm if the maintenance activities have been performed in order to prolong the life of this particular equipment. The Inspection Items are stated in a question form as these serve as the criteria or standards of maintenance.

Proper utilization of equipment and tools

The proper use of the training tools and equipment is the first and foremost task in the maintenance. The proper use of the tools and equipment is a very important task of the worker in any trade. They must be able to use them in accordance to the manufacturer's manuals as this would evidently extend the life of the equipment and tools.

Manufacturer's Manual: For the Safe and Proper Operation of an Equipment or Tools. When using the equipment or simple tools, it is best to read the manufacturers and/or Manufacturer's manuals. This would indicate the parts of the equipment, the functions of each part and the way to maintain it. We must always refer to it for reference. The users manuals must be kept handy and within the area where the equipment is kept for immediate reference.

Basic Maintenance of Tools and Equipment

To ensure that your tools work when you need them, you must take proper care of them. A good routine of maintenance for your tools is one thing that you can do to make sure that the tool you need is working when you need it.

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1. Clean out the Dust. To make sure that your tools are ready to go when you are, keep them clean and free of dust. Spend some time to clean out the dust every once in a while on your tools while they are inactive in storage.



2. Check the Cords. Look for tear/cut insulator on the power cords on your tools. This will ensure that your tool can get the power that it needs to function without an accident.



3. Use the right tool correctly. Use tools correctly and for their intended purposes. Follow the safety directions and operating procedures recommended by the manufacturer. When working on a circuit, use approved tools with insulated handles.

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Protect your Tools. Keep tools and cords away from heat, oil, and sharp objects. These hazards can damage insulation. If a tool or cord heats up, stop using it. Report the condition to a supervisor or instructor immediately.



5. Use **double-insulated tools** - Portable electrical tools are classified by the number of insulation barriers between the electrical conductors in the tool and the worker.



6. **Storing Your Tools-** Keep your tools stored in their original cases and containers. This will keep them free of dust and dirt while they are not being used.

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Perform basic preventive maintenance

A lubricant is a substance introduced to lessen friction between moving surfaces. It may also transport external particles. The property of reducing friction is known as lubricity.

Types and Uses of lubricants

Anti-rust lubricant spray:

- Loosen rusted part
- Cleans and protect
- Drives out moisture
- Stops squeaks
- Free sticky mechanisms



Wire Pulling Lubricant:

- does not damage insulation
- cling to wire and dries to a slippery film
- suitable for use with wire or cable covered with rubber (t, thw, thhn, etc)



All Purpose Anti Rust Lubricant:

- anti-rust
- lubricating
- rust removal
- decontamination
- conductance



Lubricant Oil and Engine Oil: ▪ lubricating the gear ▪ cleans and protect ▪ drives out moisture	
Silicon Lubricant: ▪ heat stable ▪ lubricates ▪ protects ▪ reduces friction ▪ water repellent	

Reminder

A good lubricant possesses the following characteristics:

- High boiling point.
- Low freezing point.
- High viscosity index.
- Thermal stability.
- Corrosion prevention.
- High resistance to oxidation.

Types of Cleaning Solvents

Solvent is a component of a solution that dissolves solute and is usually present in large proportion or amount. It can be classified as polar and non-polar. Polar solvents are solvents which dissolve / are soluble in water; while non-polar solvents are solvents which do not dissolve / are insoluble in water.

Solvents are usually used for cleaning in workshops. They are water, gasoline, kerosene, thinner and detergent soap.

The table below shows the kinds of cleaning solvent based on their solubility in water.

Cleaning Solvents	Solubility in Water	Polar	Nonpolar
Water	soluble	×	
Gasoline	insoluble		×
Kerosene	insoluble		×
Thinner	insoluble		×
Detergent soap	soluble	×	

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Uses of Cleaning Solvents

Cleaning Solvents	Uses
Gasoline	Wash greasy tools / equipment.
Kerosene	Remove dust, grease oil, paint, etc.
Thinner	Remove spilled paint on the floor, walls and tools.
Water	Wash / clean benches, tables, cabinets, etc.
Detergent Soap and water	Wash / clean benches, tables, cabinets, etc.

Maintain Inventory of Tools and Equipment

The most significant point to think at the start of your career is to acquire branded tools. They must be made out of high-quality steel and manufactured for precision. Special consideration is given to balance so that the tool/equipment will be properly maintained and prevent losses. Since the technician must work with his tools daily, regular inventory of tools / equipment is very significant.

The initial cost of a minimum number of tools is high but there is accompanying warranty guarantees satisfaction and many years of service. It is better, in the long run, to start with a few cautiously selected tools that will take care of your most common needs and then slowly build-up to a complete set. It is sometimes hard to identify and memorize the huge number of tools and equipment in the workshop, maintaining the inventory record is of great value.

Maintaining and Storing Tools & Equipment

An important aspect of any business is the maintenance and storage of tools and equipment. The investment in tools and equipment is a significant part of the overhead expenses in any operation. Proper selection and maintenance of equipment are important factors in managing business. Selecting the proper tool for the job and using the tool properly will increase efficiency and reduce maintenance problems. Purchase tools, which are well-made and suited to the intended use. Commercial usage may entail more heavy duty demands on equipment.

Hand tools:

1. Clean dirt and debris from tools after each use.
2. Oil metal parts to prevent rust.
3. Lightly sand rough wooden handles and apply linseed oil.
4. Repair loose handles.
5. Sharpen blades of cutting tools.
6. Store tools in a clean dry storage area.
7. Protect surfaces of cutting tools in storage.

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Power tools:

1. Read and follow the maintenance schedule in the owner's manual for each piece of power equipment.
2. Change the oil.
3. Clean the air filter.
4. Lubricate moving parts.
5. Sharpen dull blades or replace worn blades according to the owner's manual.
6. Replace spark plugs.
7. Drain oil and gasoline before long-term storage.
8. Check electric cords and connections on electric-powered tools.
9. Store tools in a clean dry storage area.

Equipment:

1. Store equipment in a clean dry storage area.
2. Rinse and clean spray equipment after each use.
3. Clean spreaders and check wheel-driven gears.
4. Clean carts and wheelbarrows after use.

Personal Protective Equipment (PPE)

Personal Protective Equipment (PPE) are gadgets to protect workers from injury or illness caused by having contact with the dangers/hazards in the workplace whether they are chemical, biological, radiation, physical, electrical, mechanical and others.

These are the common Personal Protective Equipment gadgets:

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Hard Hats/ Helmets

Gloves



Goggle

Mask

Work boots

Pants

REMEMBER

1. Personal protective equipment should be taken care of as of the other tools and equipment. Wipe your helmets, gloves, safety shoes before keeping it.
2. It should also be cleaned, kept in proper tool rack/ cabinet.
3. It should be stored in dry places so that it will not have mold build-up.
4. Over-all suits should be washed regularly so that perspirations and other dirt will be washed clean.

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Pictures of electricians working using Personal Protective Equipment



Pictures of Linemen's working using Personal protective Equipment



Self -Check No: 5.2-1

Maintain training equipment and tools.

1. Define Maintenance.
2. Define Quality Management
3. Why maintain equipment?
4. What are hand tools?
5. What are power tools?

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6. What are Pneumatic tools tools?
7. Identify the lubricants given below by writing their names on the space provided in right side.

1.-----



2. -----



3.-----



4.-----



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Answer Key No: 5.2-1

Maintain training equipment and tools

01. Define Maintenance?

Answer:

Maintenance is performing the routine actions which keep the device in working order, to keep in good condition, to preserve and protect the device.

02. Define Quality Management.

Answer:

Quality Management is a method for ensuring that all the activities necessary to design, develop and implement a product or service are effective and efficient with respect to system and performance.

03. Why maintain equipment?

Answer:

To maintain the optimum condition of physical facilities at acceptable levels and minimum cost for satisfy, the expected demands of TVET programs and activities.

04. What are hand tools?

Answer:

Hand tools are tools manipulated by hands without using electrical energy such as: Puller, Hacksaw, Pull-push Rule, Pliers, Hammer etc.

05. What are power tools?

Answer:

Machine/Power tools are tools manipulated by our hands and with the use of electrical energy such as: electric drill, grinding wheels, vacuum cleaner and others.

06. What are Pneumatic tools tools?

Answer:

Pneumatic tools are tools or instruments activated by air pressure. Pneumatic tools are designed around three basic devices: the air cylinder, the vane motor, and the sprayer.

7. Identify the lubricants given below by writing their names on the space provided in right side.

Answer:

1. Silicon Lubricant.
2. Wire Pulling Lubricant.
3. Lubricant Oil and Engine Oil.
4. Anti-rust lubricant spray.

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Job Sheet No: 5.2-1

Maintain Training equipment's and tools



Task Sheet– 2.1: Identify the tool and maintain activity according to the checklist.

Task Sheet - 2.2: Cleaning tools and work area.

Task Sheet - 2.3: Perform inventory of tools and equipment.

Task Sheet- 2.4: Arrange and store tools and equipment.

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Task Sheet–5.2-1:

Identify the tool and maintain activity according to the checklist available in specification 02 and fill accordingly.

Specification 02 - Maintain training equipment and tools

Tool maintenance activities checklist

	Tool maintenance activities	Y	N	N A	Comments/Hazards	Actions: (include person responsible and target completion date)
1.1	Inspections of facilities and equipment					
1.2	Cleaning and lubricating of tools and equipment					
1.3	Tagging of defective tools and equipment					
1.4	Disinfecting tools and equipment					
1.5	Repair					

Comment (If any)

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Task Sheet – 5.2-2

Cleaning tools and work area.



Instructions:

Bring cleaning solvents, rags and brooms, washing pan, electric fan and safety apparel. Clean tools and work area. Clean tools and work area.

Procedure:

A. Tools

1. Wear protective clothing and goggles
2. Gather the tools to be cleaned in the designated area for cleaning.
3. Classify the tools to be cleaned according to how dirty they are.
4. Measure and pour enough amount of cleaning solvent to the washing pan.
5. Submerge the tools in the washing pan.
6. Use paint brush to remove the dirt from the tools.
7. Get the tools from the washing pan and wipe them with rags until dry.
8. Clean and keep all materials used for cleaning.

B. Work Area (Application of 5's)

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1. Wear protective clothing and goggles.
2. If there is dirt on floor such as paint, used oil, grease, rust, etc., remove it first using appropriate cleaning solvent.
3. Use broom in cleaning remaining dirt in work area and an electric fan to facilitate drying of floor.

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Task Sheet – 5.2-3:

Perform inventory of tools and equipment.

Instruction:

Given the record book / memorandum, receipts, inventory form, ball pen and correction fluid, conduct inventory of tools and equipment, identify, record and report damaged tools and equipment and give repair recommendations if repairable.

Procedure:

1. Secure inventory forms/memorandum receipt of tools and equipment
2. Study the parts of the Inventory Form
3. Check whether the list of tools and equipment in the memorandum receipt tallies with the existing tools and equipment found in the workshop including their specifications and condition
4. List down any losses and damages you find while conducting the inventory
5. Fill out the remarks column of the inventory forms for any losses / damages
6. Recommend for replacement of lost tools and equipment and repair of damaged tools and equipment if repairable

INVENTORY FORM OF TOOLS AND EQUIPMENT

Item No.	Quantity	Unit	Description	Condition	Remarks
01					
02					
03					
04					
05					

Prepared by:

Name and Signature:

Date-----

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Task Sheet – 5.2-4

Arrange and store tools and equipment

**Instruction:**

In a specific tool cabinet and a tool rack assigned to you, arrange and store tools and equipment accordingly.

Procedure:

1. Classify tools and equipment according to their types
2. Arrange tools by their types in the shelves / racks
3. Place equipment in designated places or location

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LEARNING OUTCOME 3: DOCUMENT AND REPORT MAINTENANCE ACTIVITIES ACCORDING TO ORGANIZATIONAL POLICIES & PROCEDURES.

ASSESSMENT CRITERIA

- 3.1 Complex faults or repair requirements are reported for specialist assistance in accordance with organizational procedures.
- 3.2 Maintenance activities are documented and reported according to organizational policies & procedures.

CONTENTS:

- Reporting and documentation process
- Maintain training equipment and tools

CONDITIONS:

Trainees must be provided with the following:

- Handouts or reference materials/books on the above stated contents
- PCs/printers or laptops with internet access
- LCD/Digital Projector and Screen
- Microphones
- Bond paper
- Ball pens/pencils and other office supplies and materials
- Communication resources
- Workplace or simulated environment

METHODOLOGIES:

- Lecture/discussion
- Demonstration/application
- Presentation

ASSESSMENT METHODS:

- Written test
- Demonstration
- Oral Questioning
- Observation with checklist
- Portfolio.

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Learning Experience: 5.3-1

In order to achieve the objectives stated in this learning guide, you must perform the learning steps below. Beside each step are the resources or special instructions you will use to accomplish the corresponding activity.

Learning Steps	Resources specific instructions
1 Student will ask the instructor about the materials to be used.	1 Instructor will provide the learning materials ‘Maintain Training Equipment and Facility’
2 Read the Information sheet/s	▪ Information Sheet No: 5.3-1
3. Complete the Self Checks & Check answer sheets.	3. Self-Check/s ▪ Self-Check No: 5.3-1

Information Sheet: 5.3-1

Reporting and documentation process

Definition of terms

Planning involves the selection of objectives and the determination of the policies, programs, and procedures to be used for the achievement of the selected objectives.

Scheduling is a method of planning that cites specific objectives to be accomplished in relation to time. Inherent in any preventive maintenance program is the use of schedules to delineate when specific types of maintenance are to be performed. The major thrust of work scheduling is to improve the efficiency of the maintenance department.

Responsibilities that are normally assigned to the maintenance department are: the health and safety of the public and employees, minimization of downtime hours on production or building equipment; housekeeping and keeping the general appearance of the facilities presentable. The ultimate goal should be to optimize the use of every maintenance dollar spent in achieving the assigned mission.

Reports that lead to the identification of work pertain to how a maintenance department determines requirements for craft labour hours. The various methods of identifying work are;

- a. complains
- b. emergency service calls,
- c. foreman's inspections,
- d. periodic maintenance
- e. inspection by craftsmen,
- f. inspection group
- g. formalized planning

Periodic maintenance is preferred over preventive maintenance because a comprehensive periodic program encompasses maintenance operations that go beyond the prevention of equipment breakdown. Properly planned, a periodic maintenance program can effectively identify who, what, When, where, why, and how specific repetitive operations are to be performed expand a system to schedule repetitive inspection and maintenance of building equipment, utility distribution systems, janitorial services, and gardening activities, and the painting of buildings.

A specific work order is prepared to accomplish each of these types of periodic maintenance. Where several kinds of maintenance are required for a given item, a separate schedule is established for each operation. For example, a machine tool may have separate schedules for lubrication, electrical checks, mechanical checks, and tolerance checks for each of these activities; a separate

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work order is generated at the prescribed time and distributed to the appropriate craft skill.

A historical record is a basic component for any maintenance system 'All maintenance and repair activity of an equipment item should be reported for inclusion in a historical record .A single record that contains the complete maintenance history of the item or equipment.

The minimal information required to establish a record in a system should consist of the following item;

- An identification number of the piece of equipment. (What).
 - The location of the maintenance work (Where).
 - A determination of what operations are to be performed and how often (why, when, how)
 - A judgment as to what craft skill is required to perform the operation (Who.)
-
- Inspection would involve periodic inspection of equipment to insure safe and proper operation, assuring that periodic maintenance is performed, control of the quality of work accomplished by maintenance craftsmen, inspection of materials and parts received from vendors. and examination of items removed during repair or overhaul operations to determine the feasibility of repair.
 - Maintenance would consist of the lubricating, adjusting, and routine replacement usually classified as preventive maintenance It would also include work necessary to restore equipment to operation on a quick fix basis in the event of a breakdown.
 - Repair would consist of replacing parts to restore a piece of equipment to full operating condition, and to alleviate undesirable conditions found during periodic maintenance or breakdown.
 - Overhaul would involve the reconditioning of equipment teardown, replacement, reassembly, and testing Construction and rehabilitation would consist of building, modifying, and restoring structures.
 - Housekeeping would cover those janitorial and grounds keeping activities necessary to provide clean and orderly facilities and grounds
 - Salvage would involve the reclamation and disposition of surplus material and scrap
 - Organizing in a maintenance department is the grouping of activities necessary to achieve the mission of the department and the assignment of each group to a supervisor.
 - In its purest form, organization by operation would consist of a separate group (or individual for inspection, maintenance. repair, overhaul, construction, housekeeping, and salvage.

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Reporting process:

- You act based on the inspection report by;
- Analyzing the report.
- Investigate condition of Facilities based on the inspection report and in conformance with standards.
- Prepare repair improvement schedule to correct malfunctions and damages. (if any)
- Install continuous maintenance of facilities.

Inspection Report Template

Area/Section	Practical Work Area/Computer Laboratory		
In-Charge	Name: _____		
FACILITY TYPE	INCIDENT	ACTION TAKEN	PROGRESS/REMARKS

Reported by: _____

Date: _____

Signature over printed name:

Documentation process

Assessment

1. Verify quality characteristics standards.
2. Create and set standard value for inspection.
3. Prepare inspection check list based on standards.
4. Assess condition of facilities based on inspection and check list and maintenance program.
5. Prepare and submit inspection report.

Sample Template: Breakdown /repair report.

Area/Section	Practical work area/ laboratory area	
In-Charge	Name:	
Facility Type	Nature of break down	Recommendations
Printer HP desk jet 200	Over heating	Send HP to service center
Reported by: Signature over printed name:		Date reported:

Sample Template: for Salvage Report

Area/Section	Practical Work Area/Laboratory	
	Personnel Name:	
Facility Type	PART ID	RECOMMENDATION
Floor Model-High Speed Color Printer	Ink cartridge	Store ask up cartridge for other for other floor model printers.
Reported by: Name:		Date Reported:

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Review of Competency

Below is your self-assessment rating for module TVETENV403

Assessment performance Criteria	Yes	No
1.1. Regular inspections are carried out in the work area according to workplace procedures and standards.	☐	☐
1.2. Facilities are maintained in accordance with Occupational Safety and Health OSH.	☐	☐
1.3 Disposal of waste and dangerous chemicals are checked in accordance with Occupational Safety and Health OSH and organizational policies.	☐	☐
1.4 Equipment and tools are secured in safe places in accordance with procedures	☐	☐
1.5 Failed or unsafe equipment removed or repaired in accordance with organizational policies & procedures.	☐	☐
1.6 Housekeeping Documents are kept according to organizational procedure.	☐	☐
2.1 Maintenance activities, resources and schedule are identified and prepared according to job requirements.	☐	☐
2.2 Regular maintenance activities and routine servicing/ repair are performed according to scheduled plan.	☐	☐
2.3 Maintenance procedures are followed in accordance with the manufacturers manual and organization policies.	☐	☐
2.4 Complex faults or repair requirements outside area of responsibility or competence are reported for specialist assistance in accordance with organizational procedures.	☐	☐
2.5 Maintenance activities are documented and reported according to procedures	☐	☐

I now feel ready to undertake my formal competency assessment.

Signed:

Date:

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