

COMPUTER LABORATORY CARE AND MAINTENANCE

- A computer laboratory is a room that is specially designed and prepared to facilitate the installation of computers and to provide a safe and conducive environment for using the computers.



Factors to consider when preparing a computer laboratory

- Security of computers, programs and other resources
- Reliability of the power source
- The number of computers to be installed and the available floor space
- The maximum number of users that the computer laboratory can accommodate

Why must there be safety rules and precautions in the computer laboratory?

- To avoid accidental injuries to the users
- To avoid damage of computers
- To provide a conducive and safe environment for computer use.

Factors to consider when buying computers

- Needs of the organization/volume of transactions
- System specifications like capacity of hard disks, RAM, processor speeds
- Costs of system components and development
- Source of system components
- Environmental concerns
- Available employee skills

Computer literacy

- Computer literacy refers to having the knowledge and understanding of computers and their uses.
- Computer literacy refers to having the basic understanding of what a computer is and how it can be used as a resource.

Computer laboratory rules and regulations

- **Avoid smoking and exposing computers to dust since they contain small abrasive particles that can damage computer components and cause wearing of moving parts.**
- **Avoid carrying food and beverages to the computer room since these may fall into moving parts causing rusting or electrical faults.**
- **Avoid unnecessary movements because you may accidentally knock down peripheral devices.**
- **At all times follow the right procedures while starting and shutting down the computer therefore abrupt switching on and off the computer should be avoided since this can lead to damaging the computer.**

- Do not open up the metallic covers of computers or peripherals without permission and particularly when the computer power is still on.
- Any repairs to the computer should be done by someone who has knowledge regarding computer repairs.
- Any connections (keyboard, mouse, printer and monitor) to the computer should be done when the computer power has been switched off.
- Computers should be regularly serviced and keep a regular record of computer servicing and repair to establish maintenance costs and common problems to your computer.
- Guard your computer against new users who might spoil the computer and data corruption by unauthorized parties

- Cover the computers after using them or when not in use. Let the computers cool down before being covered to avoid trapping heat.
- The computers should be cleaned on a regular basis to remove dust from the keyboard, mouse and other parts.
- Keep computers away from excessive dust and fit special curtains that would reduce entry of dust particles and computers should not be exposed to direct sunshine.

Basic requirements for setting up a computer laboratory

UPS- Uninterruptible Power Supply

- If the power goes off, computer equipment must keep running. Even home computers need the time to shut down properly. Damage to devices and data can occur when there is sudden power loss or fluctuation.
- **UPS, or Uninterruptible Power Supplies**, provide power for devices in the event of a failure or other electrical problems.
- A UPS is essentially a small battery that keeps the power supply on for long enough for you to switch off the computer safely when there is a sudden blackout.



Air conditioner

- Air conditioning units monitor and maintain the temperature, air distribution and humidity in a computer room.
- An Air conditioning units is a device used for cooling and controlling the humidity and purity of the air circulating in a space.



Fire extinguisher



- Fire extinguishers are a critical component of saving property and lives in the case of a fire emergency.
- Owning a fire extinguisher is a form of ensuring safety.
- All computer rooms need it just in case a fire starts.
- It can save our property from burning because the use of the device will help prevent it from spreading and can even stop the flame in no time.

Security camera

- Security cameras act as a deterrent to theft and other crimes. Cameras monitor data centers or blind spots outside of doors.



- **Blower**

Used to blow/remove dust that may have entered inside the computer



- **Antiglare screens**

Regulate excess light from monitors especially CRT monitors.



- **Water proof covers**

Protect computers from moisture, water and liquids.



- **First aid box**

A first aid kit is a box or bag that contains the necessary items for providing emergency care. It is important to have first aid kits, because they allow someone who is injured, to be rapidly treated with basic first aid, before they can be properly treated at the local hospital.



- **Reasons to keep a first aid kit:** Prevent infection, Prevent excessive blood loss, Prevent scarring, Prevent an acute injury from becoming a chronic problem and Prevent death.

- **Wool carpet**

The wool carpet is used to trap dust that enters in the computer laboratory.



- **Internet gateway**

An internet gateway is your modem or router or any other peripheral which allows you to access the internet.

Burglar proofing

- Burglar proofing provides protection against any forced physical entry into the computer laboratory. Burglar proofing involves fitting metal grills in windows and doors.



Secure computer laboratory environment

- **Protection against fire**

Have gaseous fire extinguishers like those filled with carbondioxide. Water based or powder extinguishers should be avoided since they can cause damage to computer components.

- Computers should not share the same power line with other office machines to avoid overloading the power units.



Cable insulation

- All power cables must be properly insulated and laid away from pathways in the room.



- Lay them along the walls in trunks. This prevents electric shock and power disconnections caused by stumbling on cables.

Stable power supply

Protect computers from being damaged and data loss due to power instabilities by having:

- Uninterruptible power supply (UPS)
- Power stabilizers maintain power at required voltages
- A surge protector can be used to protect computer equipment against under voltage and over voltage.



Burglar proofing

- Consider installing security alarms at strategic access points that would alert the security personnel in case of a break-in.
- Fit strong metallic grills and locks on doors, windows and strengthen the roof incase the roofing is weak.
- Use Desktop locks, system unit enclosures and laptop locks.



AIR CIRCULATION

- Have good air circulation in the computer room since users and computers emit heat energy.
- This is possible through having enough ventilation points like windows, installing an air conditioning system.
- Avoid overcrowding of machines and users.
- All the above prevent suffocation and overheating.



- **Lighting**

A computer laboratory must be well lit with appropriate wall paints to avoid eye strain, headaches, stress and fatigue and always fit radiation filter screens to reduce light that reaches the eyes



- **Standard furniture**

Have standard furniture so that the tables are wide enough and strong to bear the weight of the computers and accommodate all peripherals.

The seat for the user must be comfortable and have a straight backrest that allows someone to sit upright.



Physical security

- Employ security guards to keep watch over data and information centers.
- Apply burglar proof for the computer laboratory by reinforcing weak access points like windows, doors, roofing with metal grills and strong padlocks.
- Set up alarms to alert you in case of break-ins.
- Use system locks (locked key systems) to make it difficult to access internal components like hard disks and memory sticks.
- Use cables to lock the equipment to desk, cabinet or floor.
- Electronic locking mechanism with keys, swipe cards, finger print recognition.
- CCTV Cameras to keep watch over computer systems and centers.



Software security measures

- Computers shared by multiple users in a computer center should have security software installed to limit and block certain activities for example deep freeze.
- Remote administration software should be considered with high number of computers in a computer center.
- Computer management software to monitor and limit web browsing should be installed for example K9 web protection.
- Group policy or security software to prevent malicious software from being executed and installed.
- Assigning unique authorised log-in for authentication before granting network access.

Study questions

- Define the term computer laboratory
- Mention four factors to consider when preparing a computer laboratory.
- Why must there be safety rules and precautions in a computer laboratory? List any three reasons.
- List down two reasons as to why power cables in the computer laboratory need to be properly insulated.
- Mention two reasons as to why computers need a stable power supply.
- Suggest two ways through which good air circulation can be achieved in a computer laboratory.
- Suggest two reasons why standard furniture must be provided for a computer laboratory.
- Mention five ways through which computers can be kept safe.
- Define the following terms
 - a) Computer literacy
 - b) Computer competency
 - c) Computer professional

- Suggest any ten rules and regulations that must be followed when in a computer laboratory.
- Your school headmaster wants to setup a new computer laboratory. Explain the requirements needed to setup the laboratory.
- Suggest any five factors to be considered when buying computers.
- Identify any five devices used in computer laboratory maintenance and safety.
- How can physical security be achieved so that access to computers and data centers is regulated?
- Explain any four software security measures that can be enforced in the computer laboratory.