

The Computer Laboratory

Lesson Notes

Definition of the Computer Laboratory

A computer laboratory is a room in an organization set aside for the installation of computers, facilitation and learning of computer studies.

Safety precautions and practices in a computer laboratory

Computers should be protected from factors that destroy them, malfunction them or that can lead to the loss of information. Some of the factors to consider include:-

a. Behaviour

All students who use the computer laboratory should ensure that they behave decently by adhering to the following rules and regulations:-

1. Computer labs as well as the hardware and software in the labs may only be used for study purposes
2. The user is required to behave appropriately so that the use of the provided IT services can be secured without any disturbances. The user is required to use the provided means (PCs, CPU-capacities, printers, storage capacity, etc.) responsibly and economically.
3. It is strictly prohibited to open the computers, printers or any other technical devices without permissions and guidance from the teacher/Laboratory Administrator.
4. Hardware and software have to remain in the computer labs and may not be removed. It is prohibited to make any alterations to the systems, to make copies of system disks and to further

those to third persons, to copy, or alter system programmes or to decode their original sources. It is furthermore forbidden to install and use private software – especially downloads from the internet – on the computers belonging to the School.

5. Each user is required to follow the guidelines for the usage of networks as well as for the ethical and legal questions of software usage. Each user is personally responsible for the obedience to these juridical rules.
6. Each user has to only use his/her own user-ID or the ID prescribed by the Lab Administrator. The user takes full responsibility for all actions undertaken with his user-ID, also if effectuated by third persons.
7. The computer labs are solely meant for the use of computers. Smoking, eating, chewing gums and drinking in the computer labs is strictly prohibited. Talking should be restricted to a minimum with consideration to the other users.
8. Do not personalize computer settings.
9. Ask permission to print.
10. The user has to log-in and log-out properly or shut down the computer using the right procedure.
11. In case of any problems with the network/computer or defects please contact the Laboratory administrator or teacher in charge
12. Please erase any data which is not needed any more but do not erase any data that does not belong to you.
13. Avoid making unnecessary aimless movements in the computer laboratory.
14. Please put the chairs back to the tables. Keep the rooms clean. Put the litter in the bins.
15. Leave the lab in the same condition as you expect to find it.
16. Please turn out the lights if you are the last user in the evening.

b. Handling of materials and equipment

Computer parts are sensitive to handle and can break easily if not handled with extreme care and the magnificence they deserve.

The following factors should be considered when handling computers.

1. When handling hardware materials, avoid touching uninsulated parts without anti-static strap.

Computers have devices that can be destroyed by electrostatic discharge (ESD).

2. Handle storage devices with care to avoid their surfaces being corrupted.

c. Fire

Fire can physically damage computers. To avoid fire:

- a) Do not smoke in the computer lab
- b) Do not carry inflammable substances into the computer laboratory.
- c) Install a firefighting kit especially a gaseous fire extinguishers
- d) All electrical cables should be laid properly and insulated.

d. Cabling

Electric lines should always be insulated to avoid electrical shocks. They should pass in trunks along the edges of the wall into the strategically positioned sockets.

e. Stable power supply

Electricity is the most precious need in any computer lab. It is also the most dangerous if not properly used. Power surge and brownouts are responsible for damaging computers. To avoid this:

- 1) Avoid unnecessary movements in the computer lab to avoid hitting power cables
- 2) Keep water off the power sockets
- 3) Switch off the computer and the monitor immediately incase power fault has been detected
- 4) Consider installing AVS switches (automatic voltage switches) to stabilize power

5) Use UPS (uninterruptible power supply) to regulate power before entering into the computer.

They can also be used to alert the user when power goes off.

f. **Burglar proofing**

Data loss and stealing of computers should be kept into consideration when building the computer lab.

The following factors should be considered:-

- i) Install security alarms
- ii) Shut down the computer using the right procedure
- iii) Put metallic grills at the doors and windows (but should adhere to the standards of Ministry [MOEST] emergence regulations), strong roof and CCTV (closed circuit television) cameras
- iv) Usually use passwords and encrypt confidential data. A **password** is a secret code the user must provide before accessing computer resources. **Data encryption** is the process of encrypting/encoding data in way that only the sender and the receiver can understand. For one to read this data, an encryption key (like a password) is required.
- v) Consider hiring security personnel
- vi) Do not welcome strangers into the computer lab.

g. **Ventilation**

Computer laboratory should be well ventilated to avoid computers overheating and computer users suffocating.

h. **Lab layout**

The following considerations are important when designing a computer laboratory layout.

- 1) The number of students to access the lab at a time
- 2) The number of computers and other resources to be installed
- 3) Available funds for building the lab.
- 4) The direction of wind.

- 5) Environment away from noise, smoke, dust and dampness.
- 6) Easy of movement of computer lab users

i. Dust/damp control

Humidity is the amount of water vapor in the air. Water and humidity can cause rusting and if water spills on sensitive computer parts, it can cause short circuiting thus damaging the components. To avoid dust and damp;

- i) Avoid entering the computer lab with drinks and beverage.
- ii) Install the computer lab with humidifiers and dehumidifiers to keep humidity at bay.
- iii) Don't put a water based fire extinguisher in the computer lab
- iv) Avoid splashing water when washing the computer lab. Though, vacuum cleaning is recommended due to its efficiency in eliminating dust.

j. Lighting

The computer lab room should be well lit to avoid eyes straining to see.

k. Standard furniture

The organization should provide standard furniture i.e. the seat should have a straight backrest and the table should be strong enough to support computers and their peripheral devices.

KCSE PAST QUESTIONS ON TOPIC

- 1) Explain two uses of an uninterruptible power supply unit. (2mks)
- 2) Give any three precautionary measures considered to ensure the safety of computers in a computer laboratory. (3mks)
- 3) State two methods of minimizing dust in a computer laboratory. (2mks)
- 4) Why is it necessary to have a UPS in a computer laboratory? (2mks)
- 5) Explain how each of the following would affect the suitability of a room for use as a computer room: (2mks)
 - a) Burglar proofed door
 - b) Availability of taps and sinks in the room
- 6) For each of the following give one reason why they are not allowed in a computer laboratory. (2mks)
 - a) Smoking
 - b) Eating foods
- 7) What actions should be taken in case of a fire outbreak in the computer laboratory? (4mks)
- 8) State three precautions that should be taken to ensure that diskettes are well stored.
- 9) List five precautions that can be taken to protect data stored in diskettes (5mks)
- 10) State and explain two precautions that can be taken to help recover data lost through accidental erasure. (4mks)

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