

OBERLIN HIGH SCHOOL
BUSINESS EDUCATION DEPARTMENT
INFORMATION TECHNOLOGY
GRADE 9

UNIT 1

Topic: Computer and Health

Duration: 3 weeks

Date: October 5- 24, 2020

ERGONOMICS

Ergonomics is the science which deals with the relationship between man and his working environments. It takes care of factors governing the physical and mental strains. Ergonomically designed furniture and equipment helps in reducing the risk of injuries as it reduces the strain on several parts of the body.

Health Issues Related to Computer Use

- Repetitive Strain Injury (RSI)
- Computer Vision Syndrome (CVS)
- Lower back pain

Repetitive Strain Injury

The two types of repetitive strain injury (RSI) are:

- **Tendonitis:** where a tendon is inflamed, caused by some repeated motion or stress on the tendon.
- **Carpal Tunnel Syndrome (CTS):** an inflammation of the nerve that connects your forearm to the palm of your hand.

Repetition (long or concentrated hours of keying or mousing), bad posture and lack of rest are three key factors that result in RSI.

Computer Vision Syndrome

Computer Vision Syndrome (CVS): results from bright glare from computer screens.

Lower back pain

Lower back pain: results from long-term use of computers, improper posture and incorrect furniture and equipment.

Methods of Preventing/Reducing Health Issues Related to Computer Use

Repetitive Strain Injury (RSI)

Keyboard Setup

- Use an adjustable keyboard/mouse tray
- Place the keyboard just above the level of your lap
- Center yourself to the lettered part of the keyboard
- Make sure there is enough room for your mouse
- If you have a broad chest, consider a split keyboard

Tips

- Use a light touch on the keys
- Keep your wrists in neutral (not bent up or down)
- Keep your elbows at a 90° angle
- Let your shoulders relax
- Do not use the keyboard legs to tilt the keyboard toward you
- Do not use wrist rests while typing (only use for breaks)
- Use keyboard shortcuts when possible

Mouse Setup

- Place your mouse close to your keyboard so it is within easy reach
- Adjust your mouse's software controls to meet your needs
- Use a mouse that fits comfortably in your hand

Tips

- Use your elbow to move the mouse (not your wrist)
- Take breaks every 20 minutes you use your mouse
- Use keyboard shortcuts when possible
- Use the lightest pressure needed to click
- Make sure you are holding the mouse properly (wrists in neutral, holding with a light grip, fingers should not stay bent)
- Alternate hands to operate the mouse

Computer Vision Syndrome (CVS)

Monitor Setup

- Center your monitor directly in front of you (Consider a swivel arm for your monitor if this would interfere with communication)
- Sit arms' length away
- Position the top of the monitor at eye level
- Tilt your monitor slightly upward

- Be careful of windows or lighting that can cause glare
- Adjust your font size and color if you have difficulty reading (it should be 2-3 times larger than the smallest text you can read)
- Keep your workstation properly lit (the screen should be about as bright as the area behind it)

Tips

- Take a 20 second break every 20 minutes and look at something at least 20 feet away
- Keep your screen free of dust and fingerprints

Lighting Setup

- Your lighting should be low-glare or glare free
- Use task lighting to light your desk (position the lighting next to the monitor to avoid glare)
- Use lighting that is appropriate for your tasks
- Use window coverings to block sunlight that can cause glare
- All lighting should be the same type (fluorescent is preferable)

Lower back pain

Chair Setup

- Sit with your feet flat (either on the floor or a raised surface)
- Adjust the height of the chair so your hips, knees, and ankles are at a 90° angle or greater
- Sit back in the chair and make sure your lower back has support
- Recline slightly to ease pressure on your lower back
- Make sure your workstation has a clear space for your chair

Tips

- Avoid pressure points
- Keep open angles (90° or greater)
- Take breaks and move around

HEALTH AND SAFETY

Extended use of computers, inadequate lighting, unsuitable furniture and bad posture during computer usage may affect the health of the user and cause repetitive strain injury (RSI), eyestrain and backache.

Overloading of electricity sockets and improper positioning of workstations and extension cords may compromise safety and cause accidents resulting in personal injury.

Troubleshooting - Using the process of elimination

If you're having an issue with your computer, you may be able to find out what's wrong using the process of elimination. This means you'll make a list of things that could be causing the problem and then test them out one by one to eliminate them. Once you've identified the source of your computer issue, it will be easier to find a solution.

Some precautions which can be taken to reduce the risk of accidents are:

- Ensure there are no trailing wires across or around the room which people could trip on
- Electrical sockets should not be overloaded
- Electrical equipment should be safety tested at least once a year
- There should be adequate space around desks for people to move
- Bags and obstacles should be stored out of the way so that people can't trip over them
- Food and drink should not be placed near a machine
- Heating and ventilation should be suitable for the working environment
- Work desks should be strong enough to support computers and equipment
- Staff should follow the safety regulations
- Fire extinguishers should be available, including specialist ones to deal with electrical fires.
- Fire exits should be clearly marked and free from clutter

Government Agency that analyze the act

Occupational Safety and Health Administration (OSHA) is an agency of the United States Department of Labour which sets and enforces protective workplace safety and health standards.

Health and Safety Act

Laws have been passed to ensure that employers provide a safe working environment for anyone who works with computers. This is called the 'Health and Safety at Work Act (1974).

The law states that an employer must (if relevant):

- provide tilt-able screens
- provide anti-glare screen filters
- provide adjustable chairs
- provide foot supports
- make sure lighting is suitable
- make sure there is sufficient space for people to work
- train employees how to use workstations correctly
- ensure employees have sufficient breaks
- pay for regular eye sight tests for anyone who needs prescription glasses in order to use the computer.
- **NOTE: These regulations only apply to offices and not to students in schools.**

Activity 1

Instruction: Indicate whether EACH statement is **True or False** by inserting **T** or **F** in the space provided.

1. Ergonomics is the science of fitting the job to the worker. _____
2. Musculoskeletal disorder symptoms include pain, numbness, and cramping. _____
3. You should take 5 second breaks at least every two hours to decrease
muscle strain. _____
4. The top of your screen should be at or slightly below eye level. _____
5. The elbow should be kept at 90° or greater when using the mouse or keyboard. _____
6. Lighting should be as bright as possible to help you see the screen. _____
7. You should use your wrist rests to support your wrists while typing. _____
8. To reduce glare, set up your workstation to face away from the window. _____
9. The keyboard should be placed just above the level of your lap. _____
10. It is important for your feet to always be flat on the floor. _____

Activity 2

Read the following scenarios carefully and identify the problem, cause (if any) and solution in EACH situation.

Scenario 1: Penny tries to print out invitations for her birthday party, but the printer won't print.

Scenario 2: June tries to power up the computer system but the power button would not start the computer.

Scenario 3: Jade wants to listen to a video about computer health and safety. The speaker has two connections, a USB and audio connector. She connects the USB connector to the USB port on the computer and the audio connector to one of the ports that fits the audio jack. However, when she clicked the button to play, no sound was coming from the speaker.

Scenario 4: Alice clicks the power button to power the system unit. Soon after, she pressed the monitor button to turn on the monitor but the monitor would not start.

Scenario 5: Macy went to the computer lab to type a document. She pressed the power button to power up the system unit and the monitor. Both parts were powered up, however, the monitor had no display; it was just a blank screen.

Scenario 6: Jack tried to save a file from his computer onto his thumb drive but he is not seeing the thumb drive icon on his computer.”

In completing activity 2, use the template below.

Activity 2: Template to be used

	Problem	Cause (if any)	Solution
Scenario 1			
Scenario 2			
Scenario 3			
Scenario 4			
Scenario 5			
Scenario 6			

Activity 3

You are a computer sales agent at Computer Depot. On a daily basis you have to sensitize new customers on the proper care and use of computer equipment. Alice, who is a computer novice, buys a brand new desktop computer.

1. Outline **three** things that Alice should do if the computer does not power up BEFORE she seeks technical support.
2. Outline **two** precautions Alice must adhere to in order to prevent accidents while using the computer at home.
3. Describe **two** ways in which Alice could care for her computer.
4. Tell Alice the name of the Government Agency she could visit to gain further information of the National Health and Safety Act.
5. Outline **one** regulation of the Health and Safety Act.

Homework Assignment 1: Conduct a research on Green Computing and produce a flyer explaining the concept of Green Computing and outlining advantages and disadvantages.

Requirements:

1. Use letter-sized paper [1]
2. Use images and word art [1 mark each- (2)]
3. Use appropriate border, font size and font style. [2 marks each- (6)]
4. Be creative and professional [2]
5. Inform the teacher of your partner's involvement. No involvement in the completion of this assignment equals zero.
6. Do NOT copy other people's work.
7. Convert your flyer to PDF and email your flyer to the email address

Write a brief message describing the assignment and the name of the persons who completed the task.

Due Date: Each activity is due the Friday of each week.

Homework 1 is to be submitted in the third week of October on the day you have class.