

TOPIC 8

Health and Safety in Computer Use

Protecting Your Body and Wellbeing While Using Technology

Senior Two | ICT
By Emmanuel gidudu

What We Will Learn Today

- 1. Introduction to Computer Health and Safety
- 2. Common Health Problems from Computer Use
- 3. Mitigation Measures — How to Protect Yourself
- 4. Ergonomics — Designing a Safe Workstation
- 5. Activity 4.1 — Brainstorming Health Risks
- 6. Activity 4.2 — Video Observation
- 7. Exercise 4.1 — Computer Health Body Map
- 8. Exercise 4.2 — Newspaper Article on Computer Health
- 9. Activity 4.3 — ICT Lab Health and Safety Audit

Quick Check: What Do You Already Know?

Answer TRUE or FALSE for each statement. Answers will be revealed during the lesson!

- 1. Sitting at a computer for hours cannot cause a blood clot. [T / F]
- 2. Blue light from screens can make it harder to fall asleep. [T / F]
- 3. The 20-20-20 Rule helps protect your back. [T / F]
- 4. Using headphones at high volume for a long time can permanently damage your hearing. [T / F]
- 5. Ergonomics is the science of designing software programs. [T / F]
- 6. A poorly positioned monitor can cause neck and back pain. [T / F]

(Keep your answers — we will check them at the end!)

Introduction: Why Computer Health Matters

Computers are wonderful tools that improve our lives in countless ways.

However, using computers for long periods WITHOUT proper care can cause REAL health problems. These problems affect millions of people worldwide who work or study with computers every day.

As future ICT professionals and informed digital citizens, it is YOUR responsibility to:

- ✓ Understand these health risks
- ✓ Take steps to protect your own health
- ✓ Protect the health of those around you
- ✓ Share this knowledge with your family and community

 *Think: Can a tool that helps you also hurt you? Give examples beyond computers.*

Activity 4.1 — Brainstorming Health Risks

Opening Discussion — 15 minutes | Work in PAIRS — WITHOUT looking at your notes.

1. Question 1: Think of someone you know who uses a computer a lot (parent, teacher, office worker). Have they ever complained of any physical problems? What did they say?
2. Question 2: After using a computer for a long time, have YOU personally felt any discomfort? Where? (Eyes, back, neck, wrists, head?)
3. Question 3: Brainstorm — What parts of the body do you think computers can affect? Make a list.
4. Question 4: Do you think computers can affect MENTAL health (mood, behaviour, sleep)? How?

Share your ideas with the class. Teacher writes all ideas on the board. KEEP YOUR LIST — you will check it against the actual health risks later in this lesson.

Activity 4.2 — Video Observation

Watch the video and complete the observation chart in your notebook.

Video Link: <https://www.youtube.com/watch?v=T8qGO7XQ0Uw>

Health Problem Observed	Body Part Affected	Cause Shown in Video	Suggested Solution

After the video: Compare your brainstormed list (Activity 4.1) with what you observed. Which risks did you correctly identify? Which ones surprised you? Why?

Common Health Problems from Computer Use

Prolonged computer use can cause a range of physical and mental health problems. Let us look at each one carefully.

Physical Health Risks:

Eye Strain | Repetitive Strain Injury (RSI) | Back & Neck Pain | Headaches | Sedentary Lifestyle / Obesity | Hearing Loss | Skin Problems | Deep Vein Thrombosis (DVT)

Mental Health Risks:

Sleep Disorders (Insomnia) | Internet Addiction | Social Media Anxiety | Cyberbullying Effects | FOMO (Fear of Missing Out) | Social Isolation

The World Health Organisation (2022) confirms excessive screen time is linked to eye strain, poor posture, and musculoskeletal disorders.

 **Quick Hands Up: Which of these have YOU personally experienced?**

Health Problems — Part 1: Physical

Health Problem	Body Part	Cause & Symptoms
Eye Strain (Computer Vision Syndrome)	Eyes	Staring at a bright screen for long periods without breaks. Symptoms: dry eyes, blurred vision, headaches, sensitivity to light.
Repetitive Strain Injury (RSI) / Carpal Tunnel	Wrists, Hands, Fingers	Repetitive typing and mouse clicking inflame tendons. Symptoms: pain, tingling, weakness in hands and wrists.
Back and Neck Pain	Spine, Neck, Shoulders	Poor posture — slouching or hunching over puts pressure on the spine and strains neck muscles.
Headaches	Head	Eye strain, poor lighting, screen glare, dehydration, and stress from long computer sessions.
Sedentary Lifestyle / Obesity	Whole Body	Sitting for many hours without physical activity reduces metabolism and leads to weight gain.

Health Problems — Part 2: Physical & Mental

Health Problem	Body Part	Cause & Symptoms
Sleep Disorders (Insomnia)	Brain	Blue light from screens suppresses melatonin (the sleep hormone). Using devices before bedtime disrupts sleep patterns.
Mental Health Issues	Mind	Internet addiction, cyberbullying, social media anxiety, FOMO (Fear of Missing Out), isolation, reduced face-to-face social skills.
Hearing Loss	Ears	Using headphones at high volumes for extended periods permanently damages hearing cells.
Skin Problems	Skin	Prolonged exposure to monitor radiation may cause skin irritation. Dust from equipment can trigger allergies.
Deep Vein Thrombosis (DVT)	Legs / Circulatory System	Blood clots form in legs due to prolonged sitting without movement. Can affect young people too — not just older users.



Real-Life Scenarios — What Is Going On?

In pairs, read each scenario and identify: (a) the health problem, (b) its cause, and (c) what the person should do.

Scenario A

Namuli spends 4 hours each evening doing homework on her laptop. By 9pm her eyes are burning, she has a headache, and she struggles to fall asleep when she goes to bed.

Scenario C

Amara sits hunched over her phone scrolling social media for hours every day. She has started getting neck pain and her shoulders feel constantly tight.

Scenario B

Okello works at a cyber café and types for 6–8 hours daily. He has started feeling a sharp pain and tingling in his right wrist and finds it hard to grip things.

Scenario D

Brian always listens to music on maximum volume through earphones while using the computer. He is 15 years old but already asks people to repeat themselves often.

Mitigation Measures — Protecting Your Health

Now that we understand the health risks, we must study the PROTECTIVE MEASURES.

For every health problem there are practical, easy steps YOU can take to prevent or reduce harm.

Remember: Prevention is always better than cure.

KEY RULES TO REMEMBER:

-  The 20-20-20 Rule — Every 20 minutes, look at something 20 feet away for 20 seconds. (Eyes)
-  The 50-10 Rule — Work for 50 minutes, move your body for 10 minutes. (Posture/DVT)
-  The 60/60 Rule — Headphones at max 60% volume for max 60 minutes at a time. (Hearing)
-  The 1-Hour Rule — No screens at least 1 hour before bedtime. (Sleep)

How to Protect Yourself — Part 1

Health Problem	Mitigation Measures
Eye Strain	Apply the 20-20-20 Rule. Reduce screen brightness. Position screen at eye level. Use anti-glare screen protectors. Blink regularly — we blink less when staring at screens.
RSI / Carpal Tunnel	Take regular wrist breaks. Stretch fingers and wrists every hour. Use a wrist rest pad when typing. Keep wrists straight (not bent) while typing. Adjust keyboard height so elbows are at 90 degrees.
Back & Neck Pain	Use an ergonomic chair with lumbar (lower back) support. Keep feet flat on the floor. Monitor should be at eye level. Sit straight — do not slouch. Stand and stretch for at least 5 minutes every hour.
Headaches	Ensure good room lighting — do not work in a dark room with a bright screen. Position screen to avoid glare from windows. Stay hydrated — drink water regularly. Use Night Mode or a blue light filter app on your screen.

How to Protect Yourself — Part 2

Health Problem	Mitigation Measures
Sedentary Lifestyle	Follow the 50-10 Rule: work 50 minutes, move 10 minutes. Take walking breaks. Use a standing desk if available. Exercise regularly after school.
Sleep Disorders	Avoid screens for at least 1 hour before bedtime. Enable Night Mode / Blue Light Filter in the evening. Keep phones and tablets out of the bedroom. Maintain a consistent sleep schedule.
Mental Health	Set daily screen time limits. Maintain real-world friendships and offline activities. Talk to a trusted adult if online interactions make you feel anxious, sad, or threatened. Take regular 'digital detox' days — a full day without screens!
Hearing Loss	Follow the 60/60 Rule: max 60% volume for max 60 minutes at a time. Use noise-cancelling headphones so you do not need high volume in noisy environments.

Ergonomics — Designing a Safe Workstation

Ergonomics is the science of designing the workplace to FIT THE WORKER — making it comfortable, efficient, and safe. A properly set up workstation prevents MOST physical health problems.

Component	Ideal Setup
CHAIR	Adjust so feet are flat on the floor. Back supported with a lumbar cushion or ergonomic chair. Hips at a 90-degree angle.
DESK	At elbow height when sitting. Keep it tidy — clutter increases stress.
MONITOR	Screen top at or slightly below eye level. Distance: 50–70 cm from eyes. Tilt screen slightly backward (10–20 degrees).
KEYBOARD	At elbow height. Wrists should be flat or slightly downward. Use a wrist rest.
MOUSE	Close to the keyboard. Move with your whole arm — not just the wrist. Use a mouse pad with wrist support.
LIGHTING	Avoid glare. Use blinds/curtains on windows. Screen should be perpendicular to windows — not facing or back to window. Use an adjustable desk lamp.
DOCUMENTS	Use a document holder at screen height to avoid constant head turning when typing from a printed page.

Ideal Ergonomic Workstation at a Glance

Correct setup from head to toe:

HEAD & EYES

Screen at eye level, 50–70 cm away. No glare. Tilt screen 10–20 degrees back.

NECK

Neutral position — not tilted up or down. Document holder at screen height.

SHOULDERS

Relaxed and back — not hunched. Forearms roughly horizontal.

WRISTS

Straight or slightly downward — not bent up. Use a wrist rest. Wrist support if required.

BACK

Fully supported by the chair's lumbar region. Sit upright — do not slouch.

HIPS

90-degree angle between torso and thighs. Sit at the back of the seat.

KNEES

90-degree angle. Thighs parallel to the floor.

FEET

Flat on the floor — use a footrest if needed. Do not cross legs for long periods.



Spot the Ergonomic Mistakes!

Look at this description of a student's workstation. How many problems can you identify?

"Tendo sits on a hard stool with no back support. His laptop is on his lap. He is leaning forward with his neck bent down to see the screen. The room is dark except for the laptop glowing on his face. He has been working for 2 hours non-stop with earphones on maximum volume. His feet are dangling because the stool is too high. He types with his wrists bent upward."

In your notebook, list every ergonomic mistake you can find. Then write the CORRECT setup for each one.

Expected Mistakes (for teacher reference):

No back support | Laptop on lap (heat + posture issue) | Neck bent down | Dark room | No breaks | Earphones at max volume | Feet dangling | Wrists bent upward

➡ Exercise 4.1 — Create a Computer Health Body Map

GRAPHIC ACTIVITY — Groups of 5 learners. Materials: A3 paper, pencils, coloured markers, ruler.

1. STEP 1: Draw a simple outline of a human body on A3 paper (front view).
2. STEP 2: Around the body, draw boxes labelling these computer items: Monitor/Screen | Keyboard | Mouse | Headphones | Chair | Laptop on Lap | Bright Screen at Night.
3. STEP 3: Draw ARROWS from each item to the body part(s) it affects.
4. STEP 4: Next to each arrow, write a short label of the health problem (e.g., 'Eye Strain', 'Carpal Tunnel', 'Back Pain').
5. STEP 5: Use COLOUR CODING — Red = severe risk, Orange = moderate risk, Yellow = mild risk.
6. STEP 6: Add a LEGEND (colour key) explaining your coding.
7. STEP 7: Give your graphic the title: 'How Computer Use Affects the Human Body'.

Display finished body maps on the classroom wall. Walk around and vote on the most informative graphic! This may be given as a week-long project.

✎ Exercise 4.2 — Write a Newspaper Article on Computer Health

Write a NEWSPAPER-STYLE ARTICLE to share health and safety knowledge with your community.

Article Requirements:

- Minimum 400 words. Format: HEADLINE + INTRODUCTION (hook) + BODY (2–3 main points) + CONCLUSION (call to action).
- An engaging headline — e.g. 'Are Computers Making You Sick? Here Is What You Need to Know'.
- At least THREE specific health risks with clear explanations.
- At least THREE practical protection measures for each risk.
- A LOCAL ANGLE — how does this affect people in YOUR community?
- A final paragraph encouraging readers to share the information with others.

Sharing Options:

A: Type in Word, print and display on school notice boards. B: Create a one-page Health Safety Flyer with graphics. C: Share digitally via email or school social media.

TEACHER: Collect articles, correct them, and compile a CLASS HEALTH & SAFETY BOOKLET for the school community.

Activity 4.3 — ICT Lab Health & Safety Audit

Group Practical Inspection. Score each item: 3 = Excellent | 2 = Adequate | 1 = Needs Improvement | 0 = Not Present

Category	Checklist Item	Score (0–3)	Comments
Ergonomics	Chairs are adjustable or at appropriate height for learners.		
Ergonomics	Monitors are at approximately eye level.		
Ergonomics	Keyboards are at elbow height.		
Ergonomics	Adequate space between computers for each user.		
Lighting	The room has adequate, even lighting.		
Lighting	Windows have blinds/curtains to control glare.		
Lighting	No computer is positioned directly facing a window.		
Cleanliness	The room is properly ventilated (air circulation).		
Cleanliness	Equipment is clean and free from dust.		
Cleanliness	No food or drinks near computers.		
Safety	Electrical cables are not exposed or creating trip hazards.		
Safety	A fire extinguisher is present and accessible.		
Safety	Emergency exit is clearly marked and unobstructed.		

Topic 8 Summary — Key Takeaways

-  Computer use can cause eye strain, RSI, back/neck pain, headaches, obesity, insomnia, mental health issues, hearing loss, skin problems, and DVT.
-  The 20-20-20 Rule protects your EYES. The 50-10 Rule protects your BODY. The 60/60 Rule protects your HEARING. The 1-Hour Rule protects your SLEEP.
-  Ergonomics is the science of designing workplaces to fit the worker — proper setup prevents most health problems.
-  Correct workstation setup: feet flat, back supported, screen at eye level, wrists straight, good lighting.
-  Mental health risks are just as real as physical ones — manage screen time, maintain offline relationships, and speak to trusted adults when needed.
-  You have a responsibility as a digital citizen to share this knowledge with your family and community.

Quick Check Answers — Were You Right?

Statement	Answer	Explanation
1. Sitting at a computer for hours cannot cause a blood clot.	FALSE	Prolonged sitting without movement can cause Deep Vein Thrombosis (DVT) — even in young people.
2. Blue light from screens can make it harder to fall asleep.	TRUE	Blue light suppresses melatonin (the sleep hormone). Avoid screens 1 hour before bed.
3. The 20-20-20 Rule helps protect your back.	FALSE	The 20-20-20 Rule protects your EYES. The 50-10 Rule protects posture and circulation.
4. Using headphones at high volume for long periods can permanently damage hearing.	TRUE	Hearing cells damaged by loud volume do not regenerate. Follow the 60/60 Rule.
5. Ergonomics is the science of designing software programs.	FALSE	Ergonomics is the science of designing workplaces and tools to fit the human body safely.
6. A poorly positioned monitor can cause neck and back pain.	TRUE	Monitors too low, too high, or too far away force the neck and spine into unnatural positions.

End of Topic 8

Health and Safety in Computer Use

Homework / Extension Tasks:

1. Tonight, try the 20-20-20 Rule while studying. Write a short paragraph describing your experience — did it help?
2. Audit the computer or phone setup used most in your home. List at least 3 ergonomic improvements you would recommend.
3. Complete Exercise 4.2 — Write and type your 400-word newspaper article on computer health and safety.
4. Track your own screen time for one day (total hours). Present your findings honestly and reflect: is it healthy?

Reminder: Body Map (Exercise 4.1) and ICT Lab Audit (Activity 4.3) reports are due next lesson.