

Ergonomics, Health and Safety



The term 'ergonomics' is derived from two Greek words: 'ergon', meaning work and 'nomoi', meaning natural laws. Ergonomists study human capabilities in relationship to work demands.

-- www.ergonomics.org

What is Ergonomics?

Ergonomics is the study of how working conditions, machines and equipment can be arranged in order that people can work with them more efficiently. As computers are probably the most ubiquitous type of machine in today's work and learning environments, the issue of ergonomically sound interaction with them has come to the fore. In general, computers are clean, quiet and safe to use. However, poor interaction with and positioning of computer equipment can lead to health problems, such as eyestrain, swollen wrists and backache. Problems can be avoided by good workplace design and by good working practices. Prevention is easiest if action is taken early through effective analysis of each workstation.

There are a number of practical steps that can be taken to achieve an ergonomically positive environment and, furthermore, to promote a safer learning environment. These are:

- Positioning of the person and equipment
- Arranging a safe learning environment
- Taking regular breaks

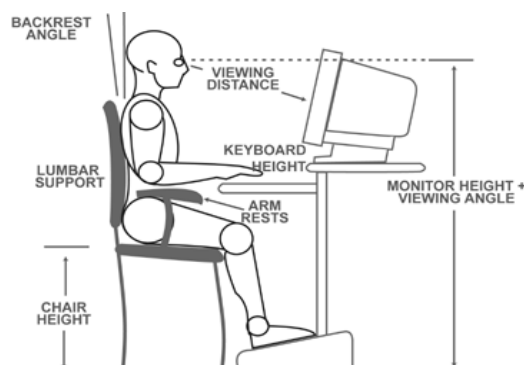
For students with disabilities, it is advisable to consult with an occupational therapist in relation to ergonomics.

Positioning

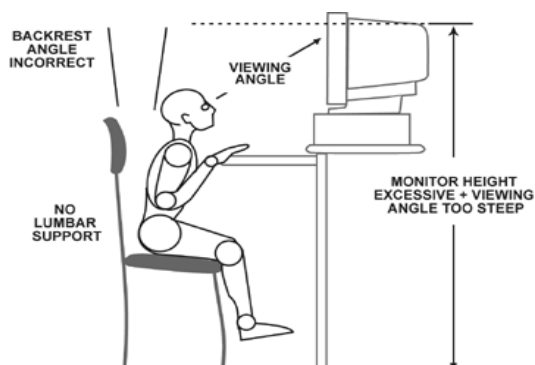
Body positioning and the positioning of equipment are fundamental to ensuring a comfortable and healthy interaction with computers. The following recommendations can help to reduce the risk of health problems:

- Sit up straight rather than slouch forward
- Use supports such as foot rests, wrist rests and adjustable chairs
- Adjust equipment to the correct height, distance and angle

The diagrams below highlight some positive and negative body and workstation positioning.



Recommended Positioning



Inadvisable Positioning

Arranging a Safe Learning Environment

The term 'workstation' refers collectively to the computer, the monitor, the keyboard, the desk, the chair and the space provided for doing work. Workstations should be comfortable and have sufficient space to allow for freedom of movement. A minimum of 4.65 square metres of floor space for adults is recommended for office or similar environments. Adequate space between workstations should be provided for students both in a classroom and computer

suite context. This should exclude space taken up by fixtures such as presses and filing cabinets.

As computers can generate heat, a well-ventilated room is an important consideration. Coiled cables also give off heat and may need to be rerouted. In addition, securing and covering trailing cables is necessary if hazards are to be avoided.

The following table identifies how specific aspects of our environment can be organised to create the right ergonomic conditions for a safer learning environment.

Environment	Health and safety considerations	Ergonomic Recommendations
VDU (visual display unit)	<ul style="list-style-type: none"> Avoid discomfort caused by reflective glare and eyestrain Protect eyes against moisture loss 	<ul style="list-style-type: none"> Take adequate breaks regularly Adjust contrast and brightness Focus on distant object regularly Use an anti-glare screen with older monitors Adjust height so that the top of the screen is at eye level Position in a downwards viewing angle Make sure the screen surface is clean
Keyboards	<ul style="list-style-type: none"> Prevent wrist strain which can develop into RSI (repetitive strain injury) 	<ul style="list-style-type: none"> Use a wrist rest Type with wrists floating above the keyboard Keep elbows relaxed Keep mouse at the same height as keyboard Tilt the keyboard to the most comfortable position
Chair	<ul style="list-style-type: none"> Prevent back problems 	<ul style="list-style-type: none"> Adjust chair to a suitable height Tilt seat for lumbar support Allow adequate knee clearance under the desk Do not sit in the same position for long periods
Light	<ul style="list-style-type: none"> Prevent visual fatigue Avoid reflective glare 	<ul style="list-style-type: none"> Provide natural light if possible Position monitors at right angles to windows, otherwise use blinds Avoid strong artificial lighting
Noise	<ul style="list-style-type: none"> Minimise distraction caused by noise 	<ul style="list-style-type: none"> Use headphones for software containing audio Position printers or photocopiers away from workstations
Heat	<ul style="list-style-type: none"> Prevent discomfort caused by heat 	<ul style="list-style-type: none"> Ventilate rooms but avoid creating draughts Turn off equipment when not in use Consider air conditioning
Electrical Safety	<ul style="list-style-type: none"> Prevent accidents 	<ul style="list-style-type: none"> Leave technical repairs to experts Reroute, secure and cover stray leads Replace frayed leads and damaged plugs Avoid overloading extension leads Be aware of coiled cables overheating

Regular Breaks

Computer users, both in workplaces and in schools, should be encouraged to take regular breaks if working for protracted periods on a computer. This may mean leaving the workstation for a few minutes every hour to avail of a work-break or to engage briefly in some other work-related activity. Not only will this allow eye muscles to readjust, it will also refresh all of the body's muscles, promoting personal health and a safe learning environment. By encouraging such practices in schools, teachers are reinforcing the importance of human-computer interaction, allowing students to form positive habits at an early stage in their development, ones that they can take with them into the world of work.

Relevant Web Sites

The Ergonomics Society

www.ergonomics.org.uk

This site explains ergonomics and related terms, features school projects, news items, publications, conference proceedings and Web links relating to the subject.

Ergonomics.org

<http://ergonomics.org>

This Web Site is dedicated to the exchange of information between the fields of ergonomics and the Alexander Technique. Suggestions and contributions from ergonomists and from Alexander Technique students and teachers are most welcome

Note: While the advice sheets aim to act as a guide, the inclusion of any products and company names does not imply approval by the NCTE, nor does the exclusion imply the reverse. The NCTE does not accept responsibility for any opinions, advice or recommendations on external web sites linked to the NCTE site.

This Advice Sheet and other relevant information are available at:

www.ncte.ie/ICTAdviceSupport/AdviceSheets