

Paying it Forward

Visual ergonomics at work and leisure

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One only has to look around to see how technology is being used by young and old. Movies in 3D. Smart phone technology. Interactive devices for purchasing train tickets or car parking vouchers. It seems that each day a new type of device is invented with the promise that it will make our lives easier or improve our access to knowledge.

Many of these devices rely on the sense of vision by the end user. However, if the display is difficult to see or uncomfortable to view, then the end user could:

- Experience physical discomfort, make mistakes or work more slowly. In the workplace this could have wide-reaching consequences, such as reduced productivity, increased risk of accidents and personal injury.
- Reject the device. This may be a disappointment for the purchaser and have commercial consequences for the developer who invests resources into a product which no-one wants to use or buy.



Using a digital device doesn't have to be a pain in the neck

Computers, smartphones, iPads and other computer devices are widespread in modern society, and are used at work and at leisure. It is easy to take them for granted and underestimate the demands they place on our visual system.

If we are unable to see the displays clearly, then we may adopt awkward postures. This can lead to physical discomfort, especially in our eyes, neck and shoulders. It can also affect our enjoyment using the device and our ability to concentrate.

Comfort and efficiency can be improved by ensuring that the devices are set-up correctly and that they are viewed from a comfortable distance and position. It is also important to have a regular eye examination, wear appropriate spectacle lenses and take frequent breaks when using the devices.



Some of the ways visual ergonomics can make a difference

Visual ergonomics is a science which aims to achieve a good balance between what a person can see and the visual demands of a task. This requires an understanding of the human visual system and an analysis of the visual demands of a task. Visual ergonomics professionals can assist by:

- Participating during the design phase of a task or an environment e.g. by providing information about what end users should be able to see so that products are comfortable, easy and safe to use.
- Providing advice post-design to improve comfort, safety or ease of use e.g. how to set up a computer display, appropriate use and placement of lighting.
- Working with individuals who have specific visual needs e.g. suggesting the use of magnification aids or other assistive technology.

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Finding the best solution

Sometimes it is easy to find a solution to a visual ergonomics problem, even if you aren't a visual ergonomist. For example, you might increase the magnification on your computer to make the font size easier to see. But the solution to problems is not always obvious, and this can be costly for the individual or for the workplace.

It is common for people to lean forward over their desk to view their computer monitor, unaware that this is contributing to their neck and shoulder discomfort.



Using trial and error, the individual might seek medical treatment for their physical comfort or the employer might purchase a larger monitor or change the workstation furniture – and still not solve the problem.

A more targeted solution could be achieved by first obtaining visual ergonomics advice. This would include an analysis of the visual requirements of the task and the visual skills of the individual. This can be a more cost effective approach and achieve a much faster solution to the presenting problem.

How can I find a visual ergonomics professional?

Visual ergonomics is a specialised area of ergonomics. Many visual ergonomics professionals are researchers within universities, but there are also visual ergonomists who provide consultancy services in private practice. Depending on their area of expertise, visual ergonomists may have a background in the health sciences (e.g. optometry), the physical sciences (e.g. physics), engineering or psychology.

The International Ergonomics Association (IEA) has a visual ergonomics technical committee which lists members with an interest in visual ergonomics. The technical committee website can be accessed by visiting the IEA website www.iea.cc — About IEA—Technical Committees—Visual Ergonomics

Another way to find an ergonomist is to contact the ergonomics society within your country. A list of the member countries of the IEA can be accessed by visiting the IEA website www.iea.cc — Council

Visual ergonomics is everywhere (almost)!

Seeing comfortably and clearly is not only important for workplace computer displays. For example:

- Lighting is used in homes, entertainment and in retail environments.
- Visual displays are used in cars, movie theatres and games.
- Printed information is used for product labels, road signage and on household equipment.
- We use our eyes for leisure and sporting activities.

There are many aspects of vision which are actively researched around the world, for example:

- Visual challenges for an ageing population
- Impact of technology use on children's vision.
- Comfort and health effects of using 3D displays.

It is essential that research keeps pace with technology to ensure that we are able to comfortably and easily use new devices which are developed. Visual ergonomics research also has important applications in product development and research findings may be incorporated into national and international standards.