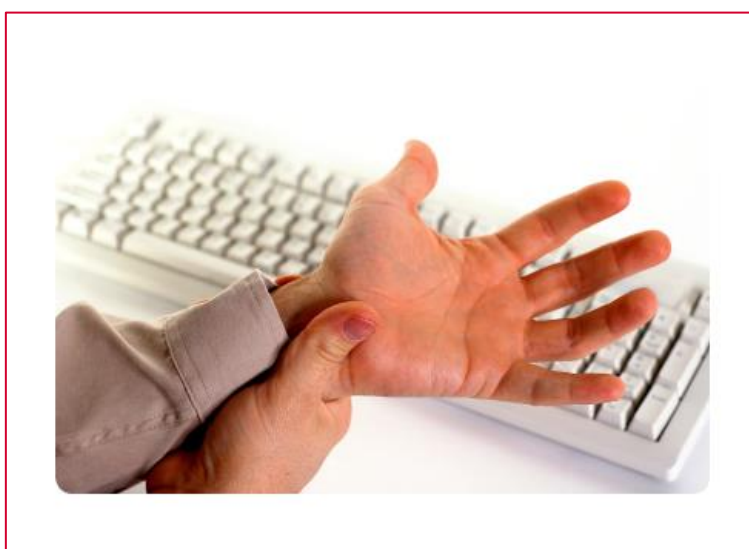


Safety Code of Practice 13

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USING DISPLAY SCREEN EQUIPMENT (DSE)



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1 INTRODUCTION

This Safety Code of Practice summarises health and safety aspects relating to the management and use of Display Screen Equipment (DSE), also known as Visual Display Units (VDU) or computer workstations. It has been written for:

- those working with DSE
- managers of areas in which DSE is used
- persons considering the acquisition and use of DSE; and
- DSE Assessors.

The aim of this Code is to reduce the risk of occupational injury and ill health resulting from the regular use of display screen equipment. Information on possible health effects is given at the end of this Code. They include Work Related Upper Limb Disorders (WRULD), visual fatigue, mental stress and general fatigue.

The procedures detailed in this Safety Code are designed to enable the University to comply with:

- the Health and Safety (Display Screen Equipment) Regulations 1992, as amended 2002 (referred to as the DSE Regulations)
- the risk assessment requirements of the Management of Health and Safety at Work Regulations 1999 (see Safety Code of Practice 4).

2 DEFINITION OF DSE

Display Screen Equipment includes the following types of work and equipment:

- **DSE** - "any alphanumeric or graphic display screen regardless of the display process involved". This includes computer monitors and screens, laptop computers and tablets. It includes DSE used in non-office environments, with a few limited exceptions. Equipment that is not classed as DSE includes small data displays, such as laboratory equipment (spectrophotometers, oscilloscopes, etc.), calculators.
- **Workstation** - The workstation includes any optional accessories to the DSE, including, telephone, mouse, document holder, work chair, work desk, work surface, or other item peripheral to the DSE, and the immediate work environment around the DSE.

3 REQUIREMENTS

3.1 Managers

Heads of Schools and Functions are responsible for day-to-day implementation of the requirements in this Code.

They must ensure that:

- assessments are made to identify the risk to the DSE 'Users' health (see below for a definition of DSE 'User') from using computer workstations. The assessment includes all workstations, the associated environment and software, and user working practices,
- recommendations arising from DSE assessments are implemented initially by the users and where they cannot complete actions themselves, by their DSE Assessor, manager or

supervisor. This may include the provision of equipment or furniture to ensure the workstation is suitable for the user.

- regular reviews are carried out to take account of changes in the environment, changes of use, deterioration or replacement of equipment and any health issues raised by users. Assessments must be reviewed every three years, or when circumstances change.
- workstations and job design are organised to satisfy the standards set out in this Code.
- each user receives instruction and training in the use of the workstation and in how to adjust the DSE and associated equipment to avoid musculoskeletal problems.
- records are maintained to demonstrate that assessments of each workstation have been carried out,
- all DSE Users are offered eyesight tests. Where appropriate corrective spectacles must be provided. Sight tests should be repeated at reasonable intervals.

<p>Guidance: Assessments, instruction and training are undertaken on-line by the DSE user, using Cardinus Healthy Working Plus – see section 4 for more information. Records are maintained via Cardinus on the Employee Self Service (ESS) system which is linked to the staff payroll system (Trent).</p>
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3.2 DSE Users

All DSE Users must:

- co-operate with the requirement to undertake training and a self-assessment of their workstation, and implement any recommendations that arise
- use DSE equipment in accordance with their training
- bring any health-related problems associated with the use of DSE equipment, computers, and associated hardware and software to the attention of their manager/supervisor. The manager/supervisor may make a management referral to Occupational Health.

4 IDENTIFICATION OF DSE USERS

The following definitions apply:

- **User** - an employee who habitually uses DSE as a significant part of their normal work. Users include anyone who is employed by the University to work on a permanent or fixed term contract. Other staff who do not fall within the definition of a User, or who use non-DSE equipment, may suffer similar problems, such as fatigue, and these areas should be assessed under the general risk assessment requirements of the Management of Health and Safety at Work Regulations 1999 (see Safety Code of Practice 4). "Users" do not include undergraduate students but may include postgraduate students who are engaged via a contract with the University.
- **Operator** – a self-employed person who habitually uses DSE as a significant part of their normal work. Examples include agency staff working at the University on a temporary basis.

In order to identify users and operators, the University has adopted two major criteria:

- the amount of time spent using the DSE; and
- the type of activity that is carried out.

4.1 Working time and activity

The amount of time that an individual works with DSE should be considered - both the length of a single session and the total time spent.

Where it is clear that the use of DSE is more or less continuous on most days, the individuals concerned should be regarded as Users. More specifically it is appropriate to classify the person as a user if they do one of the following:

- normally use DSE for continuous or near continuous spells of an hour or more at a time; and
- use DSE in this way more or less daily; and
- have to transfer information quickly to or from the DSE; and also need to apply high levels of attention and concentration;
- **or** are highly dependent on DSE or have little choice about using it; or need special training or skills to use the DSE
- undertake work that involves intense, uninterrupted periods inputting data and/or viewing data on a screen e.g. using a computer for regular e-mailing / data entry.

Staff who carry out mainly manual work but have occasional use of a computer would not be classified as users. Where there is doubt about whether a person is user or not they should be classified as a user.

4.2 Students

Undergraduate students and some postgraduate students (those not on a University contract) are not employees and therefore do not have any rights under the DSE Regulations. The University is not under any statutory obligation to ensure that they carry out of an assessment of any workstation that they use, or to provide eye and eyesight tests for these groups. However, the University does have a general duty of care towards students (see Safety Code of Practice 2), and it is therefore recommended that the following procedures are applied:

- in taught classes, continuous use of DSE should be kept below 90 minutes with not more than four such periods per week
- workstations used by students for periods of time that would make the students a user if they were employed, are designed to meet the requirements set out in the Schedule to the DSE Regulations (e.g. in teaching rooms, Libraries, IT suites etc.).
- Information on safe working with DSE is provided to students (for example by referring students to the University leaflet "[Good Display Screen Equipment \(DSE\) Practice](#)", available on the Health & Safety Services web site.

Postgraduate students (PhDs) who are engaged on a University contract may be classed as users if they meet the criteria set out in 4.1 above. Their details will not be on the University payroll system (Trent), therefore Schools should provide Health & Safety Services with a list of these students to enable them to be added to the on line training and assessment programme.

4.3 Temporary staff (Operators)

Temporary staff supplied by employment agencies are considered to be operators. The university's responsibilities are to:

- i. assess risks to agency workers using their workstations

- ii. ensure all workstations comply with minimum requirements
- iii. ensure activities are planned so that agency worker users can have breaks from DSE work
- iv. provide training to agency worker users when their workstation is being modified
- v. provide information to agency workers about risks, risk assessment and risk reduction measures

The workstation must comply with the requirements below in section 5. The leaflet "[Good DSE Practice](#)" should be made available to agency workers. In most circumstances responsibility for training rests with the employment agency.

Guidance:

Agency staff are not required to complete a self-assessment using the Cardinus Healthy Working Plus system. However the workstation must meet minimum requirements, the agency worker must be shown how to make adjustments, and they must be given, or have access online to, a copy of the DSE Good Practice leaflet.

5 REQUIREMENTS FOR WORKSTATIONS

5.1 Minimum requirements for workstations

Managers/supervisors must ensure that any workstation used by users or operators meets the requirements laid down in the Schedule to the DSE Regulations. Other workstations, not used by persons at work e.g. students, may also need to be assessed, depending on the nature of use.

The minimum requirements relate to:

- equipment - display screens, keyboards, work desks and work surfaces, work chair
- environment - space, lighting, reflections and glare, noise, heat, radiation, humidity
- the interface between the computer and operator/user.

All furniture and hardware provided for users/operators should meet the requirements of the relevant British and European Standards. These are listed in HSE Guidance 'Work with Display Screen Equipment' and in the 'Further Information' section at the end of this Code. **Appendix 1 provides a summary of requirements.** Procurement are responsible for specifying these requirements when placing contracts with preferred suppliers. All DSE workstation furniture and equipment purchased for work must be done via University approved suppliers. Where this is not possible Procurement should be contacted to discuss alternative suppliers.

5.2 Interface between DSE and User

All software (whether commercially "box purchased", user designed and written, bespoke or tailored) must be suitable for the task, not create unnecessary obstacles, and be easy to use. The user should feel that they can master the system after appropriate training. The user should be able to adapt the system to their needs. Suitable training in the use of software should be provided. Digital Technology Services provide a range of [IT courses](#) which staff can attend to improve their skills.

5.3 Special needs

Where a person has a health related or medical problem, non-standard equipment may be more appropriate, such as an alternative chair with neck support or alternative input devices. In these cases Occupational Health must be asked to undertake an assessment to ensure the correct equipment is provided.

Similarly wheelchair-bound users will not be able to use standard DSE chairs and may require alternative work surfaces. The needs of the individual should have priority over the general requirements set out in this Code. Advice for those with special needs is available from the University Disability Office (extension 8115). The majority of the users will be able to sit at a standard desk but some users may require a higher or adjustable desk

5.4 Assessment of workstations

5.4.1 On-line assessment

The purpose of a workstation assessment is to ensure that any health and safety risks to which users or operators may be exposed are properly analysed and such risks are reduced so far as reasonably practicable.

This involves:

- identifying users and operators
- ensuring all users and operators undertake the Cardinus Healthy Working Plus DSE Assessment, Training and Test.
- ensure that users review their own results and assist in making necessary improvements where necessary.

Individual assessments will need to be reviewed when circumstances change e.g. individual capability, re-arrangement of an office, installation of new equipment or furniture or change of task.

Guidance: It is good practice for Users to do a 'self-check' at intervals to ensure that they are continuing to adopt safe working practices. Workstation Plus has an Ergo check that can be accessed at any time by staff who have completed the assessment Training and check list. The University's "[Good display screen equipment \(DSE\) practice](#)" leaflet also contains practical tips.

5.4.2 Hot desking

Where users 'hot desk' an initial workstation assessment and training should be undertaken so that the user has the information necessary to make adjustments when they sit at a different desk.

The user should always check that basic requirements are met i.e.:

- Chair height (with or without footrest)
- Screen height, distance and clarity (in focus, no flicker, brightness and contrast)
- Position of keyboard and mouse
- Working space, on the desk and underneath

See Appendix 1 for further information.

6 GOOD WORKSTATION PRACTICE

6.1 Position

The [Good DSE Practice leaflet](#) shows the ideal position for someone working with DSE. It is impossible to maintain this position all the time, but workstations should enable the user to adjust the furniture, equipment and layout to suit them.

6.2 Daily work routine of users

Managers and staff must plan the activities of users at work so that their daily work on DSE is periodically interrupted by breaks or changes of activity to reduce their workload at the DSE equipment.

Rest pauses should be taken before the onset of fatigue - not afterwards to alleviate it. Periods of other activity may include natural changes in activity such as answering the telephone, photocopying, etc. Where a change in work activity is not possible, then formal rest breaks must be provided. There are no specific legal requirements for the length of DSE work sessions and rest breaks, but the following are suggested for guidance:

- no single session to last more than 60 minutes, then a 5-10 minute break; and
- shorter sessions are preferable, such as 30 minutes followed by a 5 minutes break.

Frequent shorter breaks are better than less frequent longer ones. Individual control over work patterns is the ideal. Wherever possible, breaks should be taken away from the workstation.

Guidance:

Cardinus Healthy Working Plus has a number of exercises that can be completed to assist with reducing fatigue and static loading

7 PROVISION OF TRAINING AND INFORMATION

Where a member of staff is a user, or is about to become a user, the manager must ensure that adequate health and safety training is provided in the use of their workstation.

Guidance:

Cardinus Healthy Working Plus provides basic training on the safe operation and adjustment of workstations. All users and potential users of workstations must complete the on line training and test. The training can be accessed by the link included in the invite email sent to all staff and new starters.

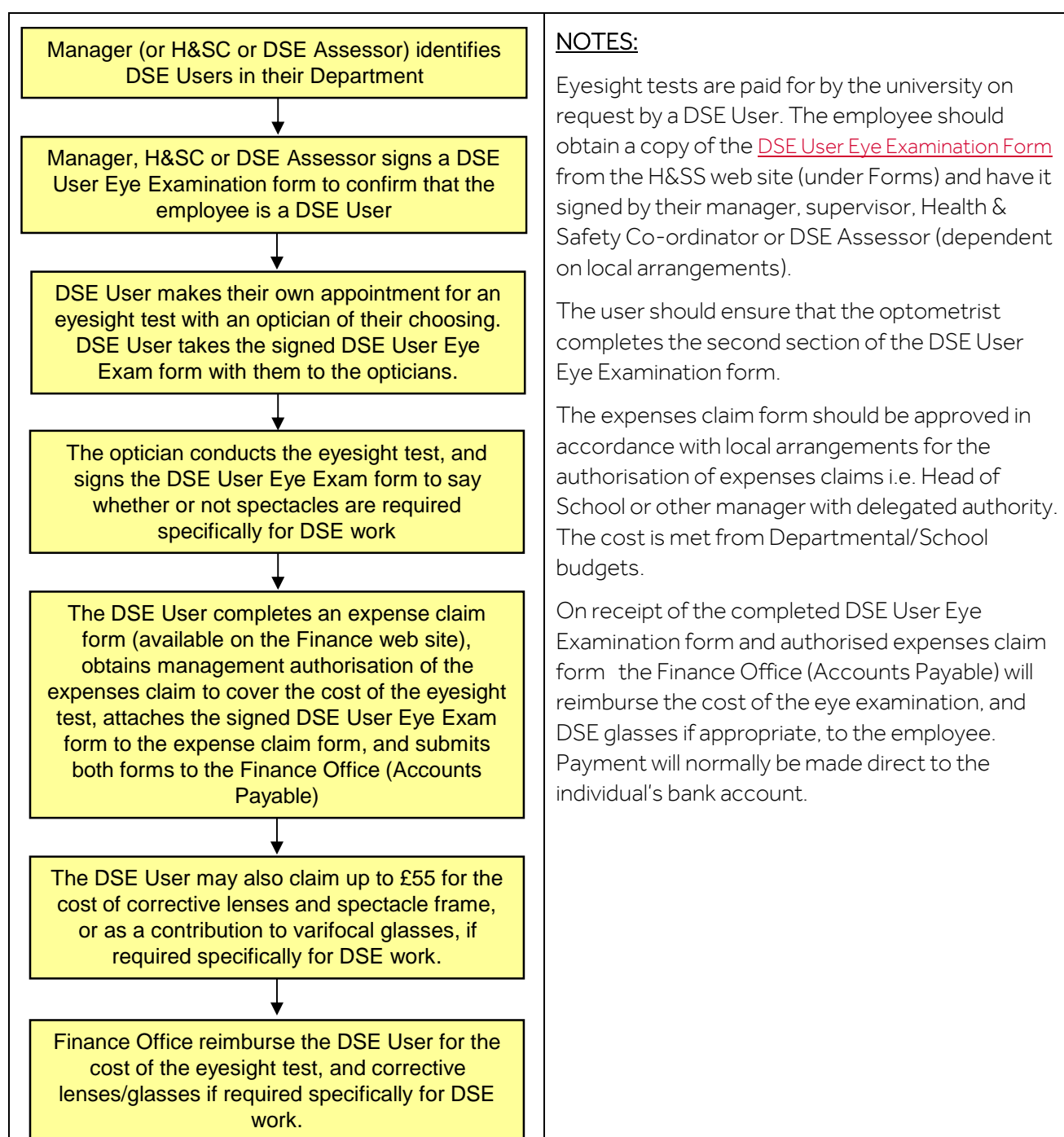
9 EYE AND EYESIGHT TESTS

University employees who are users are entitled to a normal eye and eyesight test:

- when they commence DSE work at the University
- when their job changes to such an extent that they become users
- if they experience visual difficulties that could be related to DSE use, for example headaches, eyestrain, or difficulty in focusing
- at regular intervals after the initial test, on request.

The procedure for obtaining an eyesight test is mapped out in Figure 1 below.

Figure 1 Procedure for DSE Users to obtain an eyesight test and/or reimbursement for DSE spectacles



The purpose of the eye test is to determine whether the user has any sight defect that requires correction when working with a display screen. The optician or doctor should advise how frequently eyesight tests should be repeated, this may vary between individuals. The University is only required to provide tests/repeat tests if the need for them arises in connection with the user's DSE work. The University is not responsible for examinations for eye complaints that are not related to DSE work.

Employees are not required to have an eye and eyesight test against their will.

The University must ensure that each user is provided with corrective lenses for DSE use where normal glasses cannot be used, or where the result of the eye and eyesight test shows that such provision is necessary.

For glasses which are solely for use with DSE equipment, the University will refund the cost of the corrective lenses and frame up to a maximum of £55. If a specific prescription is required for DSE work and incorporated into varifocal glasses, then similar reimbursement will be made on production of an optometrist's report specifying the need for spectacles specifically for DSE work and confirming that glasses already required for general day-to-day use are unsuitable. Glasses for distance or reading are not funded by the University as these are considered as needed for everyday use.

Guidance:

In practice, bifocal or varifocal lenses may be unsuitable for DSE work, as users will not always be able to see the screen clearly without lowering or raising their heads, which can lead to other problems such as neck pain.

It is not the responsibility of the University to provide eye and eyesight tests for employees of other employers who may be working at the University, e.g. operators.

10 DSE ASSESSORS

Heads of Service and Schools must nominate one or more persons to be the DSE Assessor(s). New Area DSE Assessors must receive training on:

- identifying DSE Users
- using the Cardinus Administration system (PACE) system to request users complete DSE Assessment, training and tests and to review the results
- advising on DSE use
- advising on workstation layout
- carrying out assessments if necessary
- drawing conclusions and recommending remedial action.

[Training courses for DSE Assessors](#) are provided by Health & Safety Services.

DSE Assessors should be competent to deal with issues such as:

- how to adjust the workstation
- how activity changes are taken as part of work routine
- training on the software aspects
- when to and how to report of defects or problems including health issues
- knowing when to request help from H&SS to complete a more detailed DSE Assessment

If further advice or training assistance is needed, contact Health & Safety Services.

10.1 Homeworkers

Where staff are formally required to work at home as part of their work duties, or will spend a significant amount of their work time at home as part of a formal arrangement then the home workstation requires assessment if such use would render the employee a user. In such instances the employees concerned should complete a second assessment within the Cardinus Healthy Working Plus system noting at the end of the assessment that this is a Home Workstation and separate to their workstation on campus.

If staff choose to use DSE at home to suit their personal circumstances and/or convenience then the DSE Regulations do not apply. It is good practice to follow the guidance given in Appendices 1 and 2 and to follow all the information and training provided in Cardinus Healthy Working Plus.

11 USE OF LAPTOP COMPUTERS, TABLETS AND OTHER HANDHELD DEVICES

11.1 Laptop computers

Laptops and other portable computers have to be compact enough to be easy to carry. Where large amounts of equipment are transported, consideration may need to be given to Manual Handling Operations assessments (Safety Code of Practice 26).

Where a laptop is used for a prolonged periods or is the permanent workstation for a user the following must be provided:

- A method of raising the screen to be at eye level of the user
- A separate keyboard
- A separate mouse

If this is impracticable in some circumstances, it is still essential to follow good ergonomic principles i.e. avoid poor posture, avoid repetitive movements and take frequent microbreaks.

11.2 Tablets and hand held devices

Tablets and other smart devices are intended for occasional use as a notepad, as an aide-memoire or to record against a checklist or pro-forma. The keypads are not designed for long periods of use or for work requiring extensive information input. Tablets and smartphones should therefore not be used for long duration work and should not be an alternative to a workstation or suitably adjusted laptop set up. If necessary, arrangements and facilities should be available for downloading and uploading information to a standard workstation where it can be manipulated and used without additional risk. If extensive text entry is essential, use a separate keyboard and prop the tablet on a stand to improve the viewing angle. It is particularly important to apply the same ergonomic principles to tablet use as for desktop or laptop computers.

Where tablets are hand held in the field and used regularly for data entry then a means of holding the equipment is necessary to reduce grip pressure.

12 DATA CONTROL

Consideration needs to be given to the consequences of losing data either from theft, damage or fire. See [Information Management and Policy Services](#) (IMPS) website for the requirements and information for keeping data safe both on and off campus.

13 POSSIBLE HEALTH EFFECTS

The possible health effects from working at DSE tend to be of a chronic nature (i.e. gradual long-term development), and can easily be avoided by having an ergonomically set up workstation and employing good techniques whilst working with DSE. Where an employee has a health concern relating to use of their workstation equipment this should be referred to the University [Occupational Health Service](#).

13.1 Work Related Upper Limb Disorders (WRULD)

Some DSE Users may suffer aches and pains in their hands, wrists, arms, neck, shoulders or back, particularly after long periods of uninterrupted DSE work. These include temporary fatigue or soreness in the limbs. Repetitive strain injury (RSI) has been the popular term for these conditions, but can be misleading. Usually these disorders are temporary in nature but in a very small number of cases can lead to chronic, disabling soft tissue disorders.

A combination of factors are likely to be the cause: poor workstation layout; awkward positioning of hands and wrists; prolonged static posture of back, head and neck; little control over work speed; and inadequate breaks. **It is essential that staff are aware of WRULD symptoms and report to their managers any signs of:**

- discomfort
- soreness/stiffness
- pain
- swelling
- numbness/tingling
- functional disability.

Where necessary the manager should refer the member of staff to [Occupational Health](#) for a more detailed assessment and advice.

13.2 Eye and eyesight effects

Medical evidence shows that using DSE is **not** associated with permanent eye or eyesight damage. However, long spells of DSE work can lead temporarily to tired eyes and discomfort, such as sore eyes, headaches, migraine, double vision or blurred vision. DSE work may also make users more aware of pre-existing vision defects. Colour blindness does not preclude DSE work. The use of minor tranquillisers and other psychoactive drugs may occasionally cause side effects which can mimic the symptoms of visual fatigue.

Contact lenses can be worn successfully in the majority of cases. There have been reports of contact lens intolerance among DSE operators (dry eyes and irritation). The causes may be environmental (i.e. dry atmosphere), reduced blink rate, and atmospheric dust attracted by the static charge that most screens produce. Using artificial tears (eye drops) and looking away from the screen regularly and blinking more often may prevent these types of problems.

13.3 Fatigue and stress

A DSE User may complain of stress but this is usually because of the increased pace of work or pressure to meet deadlines rather than the use of the DSE itself. It is worth noting that some workers will find the amount of stress reduced because the DSE makes the work easier but others may feel worse. Tasks should be designed to meet the abilities of the persons doing the work and appropriate training must be provided.

13.4 Electromagnetic radiation emissions

Previous concerns about radiation emissions from DSE are now regarded as unfounded. DSE emits visible light as an essential element of the display process. No special protective measures are needed and in no case should anti-radiation filters, anti-radiation screens, or similar devices be necessary.

13.5 Pregnancy

Recent research and studies have shown that there is no link between miscarriages or birth defects and working with DSE. Any member of staff who may still be concerned should talk to the University [Occupational Health Service](#) or their GP.

Risk assessments, including use of DSE equipment, should be repeated at intervals during the pregnancy to ensure that working conditions remain satisfactory. Minor adjustments may need to be made to the workstation or to working practices as the pregnancy progresses.

13.6 Photosensitive epilepsy

Most epileptics will be able to work with DSE without any problems. This includes those who suffer from photosensitive epilepsy and are susceptible to flickering lights and striped patterns. People with epilepsy who may be concerned about DSE work should be referred the University [Occupational Health Service](#).

13.7 12.7 Skin disorders

Skin disorders are rare but there have been cases where irritation, rashes or other skin problems have occurred when working with DSE. Although the exact cause is unknown, it is likely that a combination of dry air, static electricity and individual susceptibility may be involved. Increasing the humidity and/or fresh air input into the room may help.

14 SUMMARY OF DSE ASSESSMENT PROCESS

Each School or Function must assess and where necessary bring up to acceptable standards all workstations where individuals using DSE are classified as users or operators. The stages are:

1. Appoint a DSE Assessor for the area who will assist in ensuring that the requirements of this Code are met.
2. Identify all users or operators of DSE workstations
3. Provide user information and training by completing Cardinus Healthy Working Plus on line training.
4. Ensure that all workstation users and operators apply the DSE workstation assessment recommendations as set out in Cardinus Healthy Working Plus and deal with any issues highlighted. The system will require users to sign off on remedial actions.
5. DSE assessors should assist users and operators to review the assessment results and make any necessary improvements. This may include the provision of equipment to ensure workstations are set up correctly including chairs, footrests, screen raisers and mice.
6. Ensure that any users who request an eye and eyesight test attend an opticians and use the appropriate eye sight test form to reclaim the cost of the eyesight test.
7. Approve expenses claim forms for DSE User eyesight tests and the purchase or part purchase of any DSE Spectacles (corrective appliances) required for DSE work.
8. Assessments must be repeated where there is significant change in the workstation, such as major changes in software use, workstation furniture, etc. or where the user or operator changes. Where there is no change then the assessment should be repeated every 3 years.

15 SOURCES OF FURTHER INFORMATION

1. Work with Display Screen Equipment: Health and Safety (Display Screen Equipment) Regulations 1992 as amended by the Health and Safety (Miscellaneous Amendments) Regulations 2002. HSE L26.
2. Working with display screen equipment (DSE), **ISBN: 978 0 7176 6472 6 Series code:INDG36 (rev4)**
3. BS EN ISO 9241 Ergonomic requirements for office work with visual display terminals (VDTs), Part 1 1 to 17.
4. Seating at Work HSG57 (2nd Edition). HSE Books 1997.
5. Lighting at Work HSG38 (2nd Edition). HSE Books 1997.
6. HSE Additional Briefing on Eye and Eyesight Tests
http://www.hse.gov.uk/foi/internalops/ocs/200-299/oc202_1s2.htm

Appendix 1: Requirements for workstations

Screen

The screen must be kept clean and screen characters must be well defined, of adequate size, and with adequate spacing.

- Display stability

The image should be stable with no flickering or other forms of instability. (Note - a screen which is flicker free for 90% of individuals should be regarded as satisfying the minimum requirement).

- Brightness and contrast

Negative or positive polarity (light characters on a dark background, dark characters on a light background respectively) is acceptable. With negative polarity, flicker is less perceptible, legibility is better for those with low acuity vision. With positive polarity, reflections are less noticeable. It is important that brightness and contrast controls can be altered to suit the lighting conditions.

- Screen adjustability

Adjustment mechanisms that allow the screen to be tilted or swivelled should be provided, allowing the DSE User to adjust the screen as appropriate. They should be simple to use and operate. It should be possible to adjust the height of the screen.

- Glare and reflections

Reflection and glare may be a problem depending on the lighting conditions. Advice on this is given under Environment.

Keyboard

The keyboard must be tiltable (10-15° slope) and separate from the screen so that the user can find a comfortable position. There should be sufficient space in front of the keyboard to allow support for the hands and arms. Hand support may be incorporated into the keyboard for support while keying or at rest depending on what the worker finds comfortable. The keyboard should have a matt surface to avoid reflective glare. The symbols of the keyboard must be legible. The keyboard should allow workers to locate and activate keys quickly and without discomfort. The choice of keyboard will depend on the task, for example, if many numbers are being keyed in, then a separate number pad will be required. If numbers are not keyed in frequently, selection of a keyboard with no number pad can help to position the mouse in the optimum position for a right handed user.

Work desk or work surface

The work desk must have a sufficiently large surface for the range of tasks and equipment and to allow a flexible arrangement for the positioning of the screen, keyboard, documents and related equipment. It must have a matt surface. A minimum desk size of 1200mm wide, 800mm deep and 740mm high should be provided for rectangular desks. Non rectangular desks should have a fixed height of 740mm and a surface area of 0.96 m². Where a height adjustable desk is required the

range should be between 600mm and 900mm. Sit stand desks to have an adjustable height range between 600mm and 1200mm.³

Document holders

Document holders are not an essential requirement for a workstation but may be useful for work with hard copy. If provided they should be adjustable and moveable. They are best positioned to avoid excessive head movement by either being placed at the same height and adjacent to the screen or placed directly below the screen but above the keyboard.

Work chair

The chair should allow the worker to achieve a comfortable position. The seat must be adjustable in height and the seat back must be adjustable in height and tilt. Spoke based chairs should have 5 spoke feet for stability. It is important that chair arms, if fitted, do not interfere with freedom of movement, for example by stopping the user getting the chair under the work surface to sit comfortably at the keyboard.

Footrest

A footrest should be provided if required where staff are unable to rest their feet flat on the floor.

Environment

- Space requirements

Prolonged sitting in a static position can be harmful. Work surfaces should allow sufficient clearance for thighs, knees and lower legs and feet under the work surface.

- Lighting

Room lighting should be adequate (300-500 lux). High illuminance renders characters less easy to see but improves the ease of reading documents. Local lighting may be required in the form of a desk lamp to illuminate source documents. Care should be taken to ensure that this does not cause unnecessary glare on adjacent screens.

- Reflections and glare

Problems can arise through unshielded bright lights in the person's field of view and/or reflections on the screen or workstation. Workstations must be designed so that sources of light, windows, brightly coloured fixtures etc., do not cause glare or distracting reflections on the screen. Windows may need to be fitted with blinds or similar to reduce the daylight that falls on the workstation. Anti-glare screen filters should be used only as last resort if other methods fail to solve the problem. Screens should be located between rather than under rows of lights. Screens should be placed at right angles to windows. Diffusers should be installed over fluorescent light tubes.

- Noise

A person working on DSE should not be distracted by excess noise from equipment such as printers. Any noise from DSE equipment should not distract attention or disturb speech. Noise can be reduced by replacement of faulty parts, soundproofing, screening, repositioning of

equipment or dampening mats. Ideally, maximum noise levels should not exceed 55dB(A) - 60dB(A).

- Heat and humidity

DSE equipment should not produce excess heat which causes discomfort for users. Electronic equipment can be a source of dry heat which can modify the environment. Ventilation and humidity should be maintained at levels which prevent discomfort and problems of sore eyes. Persons who wear contact lenses may be susceptible. Generally speaking the following should be achieved:

- Temperature 19°C- 23°C
- Air change 8 litres per second per person
- Relative humidity 40-60%

Appendix 2: Good workstation setup - general tips

- Adjust the chair and DSE to find the most comfortable position for your work. As a broad guide:
 - forearms should be approximately horizontal; and
 - eyes at the same height as the top of the DSE screen.
- Ensure there is sufficient space for documents and equipment.
- Try different arrangements of keyboard, screen, mouse, and documents to find the best arrangement. A document holder may help avoid awkward neck and eye movements if you need to use reference documents or copy type.
- Try to adjust the seat height and arrange the DSE, keyboard, and any source document (in a document holder if required) so that the distances between the User's eyes and the source document, screen, and keyboard are approximately the same and, if DSE spectacles are worn, coincide with the DSE spectacle prescription distance. This configuration will avoid the need to continually refocus the eyes which may lead to sore eyes caused by unnecessarily overworked eye muscles.
- Try to relax the eye muscles periodically by focusing on a distant object, e.g. by looking out of the window for a few moments every 10 minutes or so.
- Arrange the desk and DSE to avoid glare, or bright reflections on the screen. Adjust curtains or blinds to prevent unwanted light. Avoid sitting or positioning the screen directly facing windows or bright lights.
- Make sure there is space under the desk to move legs freely. Move any obstacles such as boxes or equipment.
- Avoid excess pressure from the edge of the seat on the backs of the legs and knees. A footrest may be helpful, particularly for smaller Users.

Keying in

- A space in front of the keyboard may be helpful to rest the hands and the wrists when not keying.
- Try to keep the wrists straight when keying. Use a soft touch on the keys and don't overstretch the fingers. Good keyboard technique is important.

Using a mouse and other trackball or input devices

- Position the mouse within easy reach, so it can be used with the wrist straight. Sit upright and close to the desk, so that your mouse arm is close to your body and not stretched out. Move the keyboard out of the way if it is not being used.
- Support your forearm on the desk, and do not grip the mouse too tightly.
- Rest the fingers lightly on the buttons and do not press too hard.
- Do not twist or bend your wrist to move the mouse, use your lower arm and wrist in a straight line.
- Mouse work concentrates activity in one hand and arm and so to reduce the risks good posture and technique are required. Frequent breaks and/or short pauses should be taken, and non-computer work conducted from time to time. Periodically changing from right-handed to left-handed use (and vice-versa) can help if the mouse is used a lot. Another method of reducing risks is to take the operating hand off the mouse during short pauses and

let the mouse arm hang straight down from the shoulder. Using a different shaped or sized mouse may help.

- Mouse mats can help, but they should not have sharp edges that could put pressure on the soft tissue of the forearm or wrist.
- Special wrist rests are not a requirement. If they are used, they should be chosen with care to ensure that they do not increase the risks e.g. by placing pressure on the soft tissue of the wrist, or by encouraging a fixed position.
- An ergonomic aid (such as a Mouse Bean) may assist users by reducing the potential for compression of the central part of the wrist, and by encouraging a straight wrist and light grip on the mouse.

Other input or pointing devices may give rise to problems if used incorrectly e.g. intensive use of a trackball or joystick may cause aches and pains in the fingers, hands, wrists, arms or shoulders. Similar preventative principles as for use of a mouse should be applied, namely the right size and shape for the user, suitable for the type of task being undertaken, being used in the right environment with enough space and on a suitable surface, and positioned close to the user's body.

Reading the screen

- Adjust the screen brightness and contrast controls to suit room lighting conditions.
- Make sure the screen surface is clean.
- When setting up software, choose options giving text that is large enough to read easily on the screen when sitting in a normal, comfortable working position. Select colours that are easy on the eye (e.g. avoid red text on a blue background or vice versa).
- Light characters on a dark background make flicker less perceptible, and make characters easier to read for those with poor vision.
- Dark characters on a light background make reflections less perceptible and make edges appear sharper.
- Individual characters on a screen should be sharply focused and not flicker or move. Poor resolution may lead to confusion of "8" with "B", "O" with "Q", "5" with "S", etc. The DSE should be serviced or adjusted to correct problems of this nature.

Posture and breaks

- Don't sit in the same position for long periods. Make sure you change your posture as often as practicable. Some movement is desirable, but avoid repeated stretching to reach things that are needed.
- Torsional twisting of the back to reach, say, a printer located behind the User should be avoided. In such cases the User should rotate using the chair swivel and not twist the back. If such twisting is frequent then the workstation should be rearranged to remove the problem.
- Make use of natural breaks in the job. If there are none then formal rest breaks will be required.
- Commercial software is available that monitors periods of use and intensity, and which will provide on-line guidance about the need for breaks. If necessary it will 'freeze' the computer if the guidance is not followed.

Appendix 3: Version control

Version	Changes	Author	Approved by	Approval date	Published date
4.0	Revised to reflect: <ul style="list-style-type: none"> • on-line assessments and training using Cardinus Workstation Plus • refresher period of three years for assessments • additional information on workstation dimensions • additional information on hot desking • additional information on use of tablets • clarification of requirements for temporary workers • clarification of requirements for eyesight tests 	M. Simpson, H&SS	UHS&S Committee	08/03/16	08/03/16
5.0	<ul style="list-style-type: none"> • New front and rear pages version control tables • Weblinks updates • Weblink to revisited eye test claims form v.5 • Referencing Cardinus Healthy Working Plus as the December 2022 online DSE system 	S. Ansell, H&SS	H&SS	21/11/22	21/11/22
6.0	<ul style="list-style-type: none"> • Weblink update to revised eye test claim form v.6 • Weblink update to revised "Good DSE practice" safety guidance leaflet v.2 • Removal of weblink to older Cardinus online DSE training/assessing system 	S. Ansell, H&SS	H&SS	30/01/23	30/01/23