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Unit 25, Assignment 1

Trouble Free Systems

Solihull College
October 2022

Task One P1, M1

Policy, Procedures & Legislation

Policy & Procedures

Procurement of Equipment

Procurement is the process of sourcing and purchasing equipment required for a business. This is typically a lengthy process that involves many clerical factors:

- Budget – How much does the company have to spend on this resource?
- Requirements – What does the company need the equipment to do?
- Longevity – Will the equipment need to be replaced on an ongoing basis?
- Support – What support and warranty is provided by the supplier or manufacturer after purchase?

Factors included within an IT equipment procurement policy include checks for whether new items will be compatible with the existing infrastructure of software and hardware. For example, if a company relies on software that only works on certain operating systems, this needs to be checked before the software or device is purchased.

A company may maintain an approved vendor list, which is an array of suppliers and manufactures the company has a working relationship with or has verified as providing appropriate equipment.

Within the public sector, a bidding process may be required to ensure the best value-for-money solution.

Sustainability & The Environment

Technology and electronics can produce masses of waste and be heavily disruptive to the environment, which is why it is important to have an Environmental policy.

It is important that the lifecycle of a product be considered. Many organisations refresh their entire fleet of desktops and laptops at once every several years. This produces a significant quantity of e-waste that must be disposed of appropriately. Options for this include donating, recycling or reusing. Specialised e-waste companies are able to

disassemble and extract hazardous substances from devices before they are sent to general waste disposal.

Documentation & Problem Escalation Procedures

It is important in any organisation to have comprehensive documentation of policies and procedures. This ensures that everyone is 'in-the-know' and knows the expected processes for common tasks and issues. For example, documenting common IT problems within an organisation and instructing users to access this documentation can reduce the load on an IT service desk.

It should be expected that employees are able to use initiative for problems within their field of knowledge and attempt to find solutions themselves, however it is also important that they are able to assess the severity of an issue so it can be escalated and reported, and assistance sought from another party.

Employee & Employer Responsibilities

It is the employer's responsibility to ensure the workplace is a safe environment where problems can be reported and acted upon promptly.

Employees must co-operate and follow documented policies and procedures while reporting any issues that may arise.

More is mentioned on the responsibilities of each party in the section below under *Legislation*.

Legislation

Health & Safety

Health & Safety Legislation governs the responsibilities of both the employer and employees. The *Health and Safety Executive* (HSE) issues guidance and legislation covering many aspects, including what constitutes a safe working environment and how this can be achieved[i].

Every business with five or more employees must have a written policy which sets out how the business handles health and safety, who is responsible and what is expected of both the employer and the employee. This must be available to all employees. This is stipulated by the *Health and Safety at Work etc Act 1974 (HSW Act 1974),* and *The Management of Health and Safety at Work Regulations 1999*[ii]. Employers must assess the risks to anyone who could be affected by their activities, including customers and their own personnel[iii].

Within IT, there is regulation regarding 'DSE' (display screen equipment). It stipulates that employers must "protect [their] workers from the health risks of working with [screens]," including suggesting regular breaks[iv]. Other legislation regarding IT covers topics like electrical safety (not overloading sockets, providing appropriate training to those working with electrical devices) and manual handling (lifting, carrying, etc items). Some specific requirements include providing adjustable chairs for ergonomics, ensuring suitable lighting and that risks such as trailing cables should be managed[v].

Portable Appliance Testing (PAT)

The *Electricity at Work Regulations 1989* require that electrical equipment within an organisation that can cause harm is kept in a safe condition. PAT testing is not compulsory by law; however, it can be an important part of ensuring the safety of employees[vi].

Many organisations chose to regularly test electrical devices such as computers and other IT equipment. A maintenance routine can include visual checks, such as checking the condition of cables and plugs, and more specialised testing such as the validation of connections and appropriate polarity.

Image: An example of a PAT sticker on a laptop's power brick showing the test date and the tester's initials. This is a common way to mark devices that have been tested for safety in an organisation. *Own Photograph*

Why stick to the rules?

Having policies and procedures in place within an organisation is vital for protecting both employees and the employer. They can provide a framework for the correct approach to potentially dangerous tasks and serve as documentation that a company pays close attention to health and safety. Procedures and policies are also put in place to ensure that employees and employers stay within the bounds of the law and the appropriate legislation surrounding health and safety. They also exist to ensure that everyone is held to the same standards and expectations, which helps create a fair work environment.

Legislation regarding health and safety exists for a reason: to reduce the risk of injury, illness, and death within the workplace. Failing to comply jeopardises a company's chances of being found not-at-fault if an incident were to occur[vii]. It also shows a discontent for the safety and wellbeing of their employees which can reflect poorly on their reputation and brand image.

Under the *HSW Act 1974*, a company—and potentially individual members of staff—can be prosecuted if a health and safety issue is attributed to their neglect. This can result in prison sentences and fines. As an example: after an employee was seriously injured by a vehicle at Heathrow Airport in 2021, British Airways was fined £1.8 million. A HSE inspector said that *"[they] failed to appreciate the serious nature of the risks to which its employees were exposed and, as a result, failed to take appropriate action to ensure they were properly protected."*[viii] [ix]

Task Two P2

Risks & Precautions

Health and Safety Risks & Mitigations

Electrocution

When working with any electronic device—including computers and other such equipment—there is always a risk of electric shocks if handled improperly or unsafely. Faulty connections and components can expose a user or engineer to potentially lethal electric current.

The more hands-on someone is, the greater the risk of sustaining an electric shock. This is compounded by poor maintenance and lacklustre safety procedures. For example, an improperly grounded and faulty power supply may cause the metal of a computer chassis to be live at mains voltage. The likelihood of something like this happening, however, is extremely low if due diligence is used when purchasing components. Respectable, reputable brands should be chosen and visual inspections for faults should be carried out before connecting devices to power.

Heavy Lifting

Many high-end computers and server equipment weigh upwards of fifty kilograms when populated with components and drives[x]. Server racks and multifunction printers can also be especially large and cumbersome. As square boxes with harsh corners, these factors contribute to most fixed IT equipment being difficult and unwieldy to lift, carry and move.

One of the most common injuries obtained within the IT sector is musculoskeletal problems obtained while improperly moving equipment. It is likely that anyone working in a hands-on IT role will be faced with the prospect of moving cumbersome equipment at some point.

As a precaution to this, general advice for lifting awkward/heavy objects can be followed. Keeping one's back in an upright position and lifting with the legs rather than the back is the recommended practice. Assistance should be sought for excessively heavy items (greater than twenty kilograms) or if there is any doubt[xi]. Dollies, trollies, and carts can be used for longer distance movement.

Injury

As well as severe injury, there is a risk of smaller day-to-day injuries that can be incurred while working as an IT technician. Many computer cases and components feature sharp, unfinished edges that can cause scraps and cuts while a slip of a screwdriver can cause one to jab themselves. Falling equipment and trip hazards are also factors.

Though routine, the prevalence of these injuries can still be reduced through the use of thorough risk assessments and ensuring all employees follow HSE policies and adhere to safe working practices.

Fire

Working with electronics and mains voltage, there is always the potential for fire. Fires are more likely when using older, unmaintained equipment or equipment that is broken or damaged. Electrical fires can also start when sockets are overloaded and too much power is drawn or from an accidental short-circuit being made somewhere along the line.

Mitigating fire risks can be achieved by the routine maintenance of potentially hazardous equipment. Fire evacuation procedures and training certain employees can ensure uncontrollable fires incur no human penalty.

Electrostatic Discharge

Static electricity is a common phenomenon that results in a small amount of electrical charge remaining on the surface on of a material. It can build up through the triboelectric effect when rubbing feet against a carpeted floor or when combing one's hair. This latent electricity can be discharged when handling electronic devices and has the potential to damage or destroy sensitive electronic components within a computer. There is little risk posed to people due to the small amounts of stored current, however a significant risk is posed to components—particularly older, less resilient ones.

The risk of electrostatic discharge can be mitigated by using an ESD mat or an ESD strap that provide a path to ground for electricity built up on one's body.

Ergonomics & Posture

Working at a desk for extended periods can be extremely detrimental to a worker's health. The risks associated apply to everyone spending substantial amounts of time at a desk, therefore those in an IT or

administration position are more acutely at-risk if no mitigations are taken.

The Health and Safety Executive issues guidance on the correct setup of computer peripherals and working practices. Following this guidance ensures a comfortable working environment for all and reduces the risk of musculoskeletal issues such as Repetitive Strain Injury and Carpal Tunnel Syndrome.

Improvements to posture stipulated by the HSE[xii] include ensuring appropriate back-support, keeping keyboards and mice in-line with elbows, and positioning the top of screens at eye-level. There is also guidance that states frequent short breaks are more effective than infrequent longer ones. It is additionally a requirement of employers of users of Display Screen Equipment to provide eye-tests and glasses if required[xiii].

First-Aid

If an injury were to occur, having specially trained appointed members of staff can ensure that care can be provided as fast as possible. Even basic first-aid training could prove potentially lifesaving in the event of a serious incident[xiv].

Relevant Industry Qualifications

To further alleviate the opportunity of potential risks, it is important to ensure employees are appropriately trained and are knowledgeable about the tasks they are expected to perform. A less experienced or underqualified employee is more likely to make potentially harmful mistakes than one that holds more experience and has studied relevant qualifications.

Task Three P3

Planning

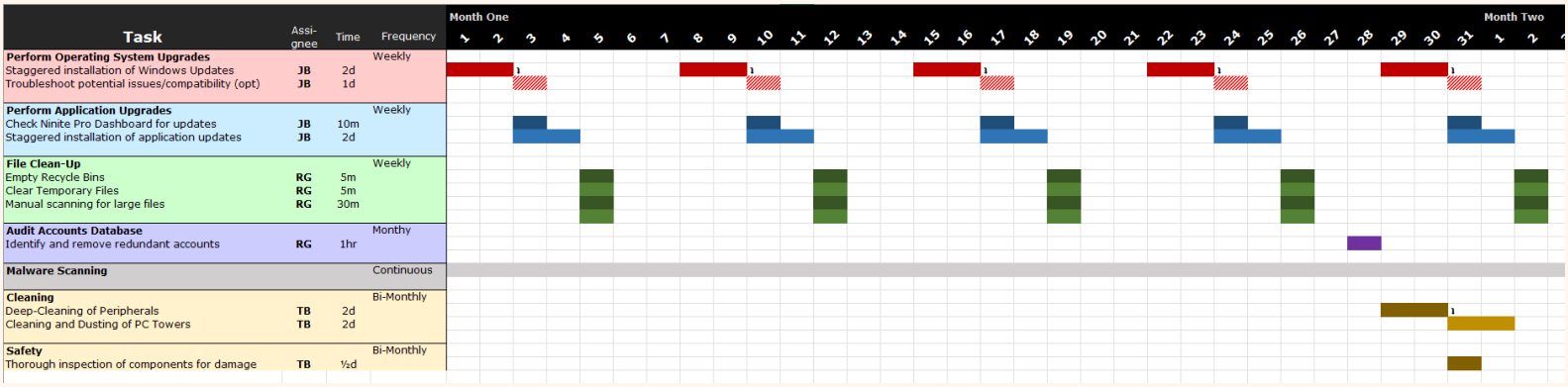
Planning routine maintenance tasks can prove useful to an IT practitioner. It enables them to visualise steps that must be taken and when. A larger team could also benefit from the ability to delegate and assign tasks to individual members to spread workload.

Having no plan in place can result in forgetting important maintenance activities. A simple list may not contain information about the frequency or expected timeframe of the tasks it contains.

A Gantt Chart is a type of planning document that enables the scheduling of tasks within a larger project. It can also be used for the planning of routine tasks. Along the Y Axis is a list of tasks. This list can also contain an assignee and progress. The X Axis contains the dates and times of the tasks. Blocks are drawn to illustrate the timeframe of each task and hierarchy can be displayed through the use of arrows.

On the adjacent page is an example of a Gantt chart, created to plan the maintenance of the computers in a small office. It includes tasks such as operating system upgrades and cleaning. It features additional columns to specify who is assigned to the task and how long it is expected to take.

Task	Assignee	Time	Frequency
Perform Operating System Upgrades			Weekly
Staggered installation of Windows Updates	**JB**	2d	
Troubleshoot potential issues/compatibility (opt)	**JB**	1d	
Perform Application Upgrades			Weekly
Check Ninite Pro Dashboard for updates	**JB**	10m	
Staggered installation of application updates	**JB**	2d	
File Clean-Up			Weekly
Empty Recycle Bins	**RG**	5m	
Clear Temporary Files	**RG**	5m	
Manual scanning for large files	**RG**	30m	
Audit Accounts Database			Monthy
Identify and remove redundant accounts	**RG**	1hr	
Malware Scanning			Continuous
Cleaning			Bi-Monthly
Deep-Cleaning of Peripherals	**TB**	2d	
Cleaning and Dusting of PC Towers	**TB**	2d	
Safety			Bi-Monthly
Thorough inspection of components for damage	**TB**	½d	



U25A1 Gantt Chart.xlsx

Sources

[i] https://www.hse.gov.uk/aboutus/our-mission-and-priorities.htm
[ii] https://www.hse.gov.uk/simple-health-safety/policy/index.htm
[iii] https://www.hse.gov.uk/simple-health-safety/risk/index.htm
[iv] https://www.hse.gov.uk/msd/dse/
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