NPA: Business Improvement Techniques
(G8YY 45)

Candidate support pack

Contents

Introduction

About this NPA

The National Progression Award (NPA) in Business Improvement Techniques has been developed in response to demand from industry for nationally-recognised short programmes in Business Improvement Techniques. The requirement of the programme is to introduce employees to some of the basic principles and equip them with the fundamental skills of Lean Management.

The Units for the award were selected from those available in the SVQ in Business Improvement Techniques and were chosen following extensive consultation with industry and training providers.

This National Progression Award — Business Improvement Techniques (SCQF level 5) — is designed to help you to identify and undertake improvement activities in your workplace and produce measurable benefits. There are no entry qualifications or age limits required for these qualifications, unless this is a legal requirement of the process or the environment.

Key requirements

In order to be successful you will need:

- approval to undertake improvement activities
- the relevant equipment, materials, documentation and personnel to undertake improvement activities
- a work area to apply the principles and techniques of a workplace organisation activity
- to work safely at all times, complying with health and safety and other relevant regulations and guidelines
- to work effectively as a team member within a continuous improvement environment

Key areas of performance

To achieve this qualification, as a competent person, you must contribute to the following:

- planning improvement activities
- setting quantifiable targets and measuring success against them
- improving an area of work to produce business benefits
- recommending changes to company procedures or documents
- maintaining good working relations
- keeping others informed of your work plans
- improving the organisation of your workplace
- making recommendations for the use of visual controls and standard documents

Key areas of knowledge and understanding

The qualification will help you to develop the following key areas of knowledge and understanding:

- how a work area is selected for improvement activities
- the principles and deployment of continuous improvement activities
- the eight process wastes and how to eliminate them
- how to carry out a structured improvement activity and establish measurable benefits
- how to arrange and label resources or equipment for rapid identification and access
- how to score and audit the workplace
- how to encourage others to identify potential improvements
- how to challenge fixed ideas and use data to resolve concerns or disagreements
- how to undertake improvement activities in a team environment
- how to keep others informed of the progress of the improvement activities
- how to make recommendations for the creation or changes to standard operating procedures
- how to quantify and measure improvements and display these visually

Skills and techniques

After completing this award, you should be able to:

- contribute to the planning and delivery of continuous improvement activities
- undertake activities that provide measurable business benefits
- work effectively as a team member within a continuous improvement environment
- contribute to team activities by providing ideas and solutions to problems
- find ways of resolving issues and concerns
- keep others informed of the progress of your improvement activities
- carry out the principles and techniques of a workplace organisation activity
- consider the work area and its activity, and identify where improvements could be made
- make recommendations for the creation of, or change to, documents and visual controls
- take responsibility for your own actions and for the quality and accuracy of the work you carry out

About this learning and teaching pack

This learning and teaching pack is designed to help you develop the knowledge and understanding and generate the evidence required to achieve this NPA. The pack has three Units in addition to this introduction: Contributing to Effective Team Working; Contributing to the Application of Workplace Organisation Techniques; and Contributing to the Application of Continuous Improvement Techniques (Kaizen).

Each of these Units contains information and follow-up activities to help you apply what you have learned. At the end of these Units there is a self-check questionnaire to help you check your knowledge and understanding so far. You should discuss your answers with your trainer.

Unit F1SX 04: Contributing to Effective Team Working

Introduction

About this Unit

This Unit is designed to help you work effectively as a team member in a continuous improvement environment. It involves you establishing and maintaining productive working relationships while challenging fixed ideas. You will be expected to deal with disagreements in an amicable and constructive manner. You will also need to contribute to team activities, provide ideas and solutions, and find ways of resolving difficulties. Finally, you will be responsible for keeping others informed about the progress of your improvement activities.

Key areas of performance

In order to successfully complete this Unit, as a competent person, you must:

- establish and maintain productive working relationships
- use key performance measures and communication processes available
- deal with disagreements in a constructive way using data and information to support your views
- provide ideas and solutions to resolve issues
- use relevant information to keep others informed about work plans or activities that affect them
- seek assistance from others in a polite and courteous way
- respond in a timely and positive way when others ask for assistance

Key areas of knowledge and understanding

The qualification will help you to develop the following key areas of knowledge and understanding:

- the importance of creating and maintaining effective relationships
- the types of problems that can occur with working relationships
- how to deal with difficulties and who you should seek for help
- how to use data to challenge fixed ideas
- how to communicate to others your performance and what types of information are available to you
- how to politely ask for different types of assistance
- the effects of asking for assistance at the wrong time
- the methods used in your area for effective communications

Team working in a continuous improvement environment

To carry out the work to achieve the requirements of this Unit, you must work in a team environment and in the context of continuous improvement. In completing this Unit you will need to demonstrate achievement of the performance and knowledge statements through their application to Kaizen activities.

The Unit asks that you demonstrate the learning outcomes through both oral and written means. You should discuss with your trainer how these will be assessed before starting the Unit. Good examples of evidence include e-mail, minutes of meetings and reports, while oral communications can be shown through photographs and minutes or via video. Your assessor may also wish to directly observe you carrying out aspects of this Unit.

About this learning and teaching pack

This part of the learning and teaching pack is designed to help you develop the knowledge and understanding and generate the evidence required to pass this Unit.

It is divided into the following sections:

- Team working basics
- Maintaining good working relationships
- Oral communications
- Written communications

Each section contains information and follow-up activities to help you apply what you have learned. At the end of this Unit there is a self-check questionnaire to help you check your knowledge and understanding so far. You should discuss your answers with your trainer.

Team working basics

What is a team?

There are numerous definitions of a team, but as a rule they can be considered as 'two or more people working with a shared vision towards a common goal'. We all work in teams socially and professionally and there are a number of different types of team that form, for a variety of reasons. Examples of teams include:

- Work groups — people who work together on a regular or daily basis in the same work area.

- Management teams — generally a group of managers overseeing a specific product or service.

- Executive teams — senior management and board directors tasked with ensuring the whole organisation performs.

- Product development/research and development teams — usually dedicated to a particular objective and often with a limited time-span.

- Cross-functional teams — individuals brought together with different backgrounds and from different parts of the organisation, usually to tackle a particular project.

- Improvement teams — either a natural work group or a cross-functional group responsible for improving an existing process or product. These groups are often formed to tackle a specific project but might be retained as a business unit.

Normally teams are made up of people from the same employer, but increasingly they are being extended into the supply chain. Certain sectors already use teams from many organisations. The construction industry typically uses a wide team with members from architects, engineers and builders, to name a few. These extended teams provide different challenges, with individual company objectives potentially conflicting with the wider team goal.

The benefits of team working

Over the past 20 to 30 years, the importance and use of teamwork has grown considerably. This is partly due to the removal of traditional tightly defined job roles and the movement towards a more flexible workforce. Employers are also reducing the levels of hierarchy in many organisations, moving from a worker/foreman role to a more team-based work unit.

There are many reported benefits of team working, some of which are:

- improved speed in completing tasks, especially in research and development, and customer service

- ability to deal with complex problems

- improved customer focus

- increased learning by utilising the skills and experiences of the team members

- improved job satisfaction

These benefits appear once a common purpose and a clear understanding of the team's objectives have been achieved. It is also important to understand the different skills and experience of the team members in order to achieve these benefits.

Stages of team development

One of the most widely accepted theories of team success was produced by Bruce Tuckman in 1965. This theory explained the process of groups as they came together to tackle a task and how they passed through a series of stages until they became an effective team. There are four classic stages, though these have been added to over the years. The original four stages are:

Forming — the team is assembled and their task is allocated. The team works as individuals rather than a team.

Storming — the team enters a period of conflict where different ideas compete for dominance and relationships are worked through. This period can be destructive: sometimes teams get stuck at the storming stage.

Norming — the team starts working in an open and friendly environment. Relationships continue to grow and trust develops within the team.

Performing — the team is open and flexible and has a high degree of independence and motivation.

A fifth stage was added to deal with the final splitting of the team once its objective has been reached, sometimes known as mourning.
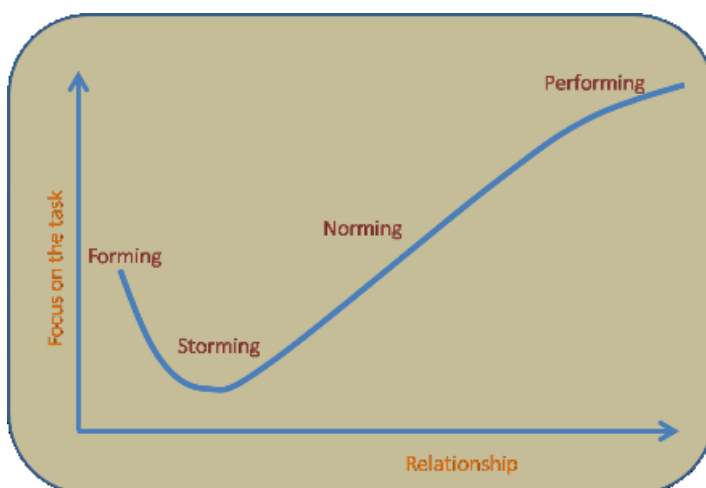
Team roles and skills

Research has shown that a successful team requires a mix of technical skills and a variety of personality types. A lot of evidence for this has been provided by research work carried out in the spheres of management and psychology. This research has lead to the production of assessment methods designed to identify personality types or traits in order to produce teams with the correct balance.

Dr R. Meredith Belbin identified nine team roles in his research in the 1970s.[1] His tests are used today to identify the preferred behaviour of each of the team members. Myers-Briggs also examined the characteristics of team members but used 16 different profile types. Again this assessment tries to allow a balance to be brought to the team by identifying people with a mix of traits. There is a significant amount of research and literature about these and other team assessment methods, and you may wish to read about these. Knowledge of team traits is not compulsory to achieve this qualification.

A correct mix of technical skills is also required if the team is to be successful. An analysis of the skills available to the team is often useful and can be easily displayed in a skills chart or matrix. There are a number of variations to skills matrices, but one of the most common is where each team member is listed and marked against a list of skills or competencies. These charts are useful in identifying whether the team has the right mix of skills and where there are gaps. Identifying these gaps can lead either to additional team members being found or to up-skilling existing team members. Two team skills matrices are shown below; the first shows the skills required by each employment role, while the second specifies achievement of different skills by each person.

Programs	Top Management	Middle Management	Schedulers	Mfg. Prod Engineers	Facility Planners	Production Supervisors	Setup Operators	Production Operators	Team Leaders	Team Members	Maintenance Techs	Inventory Techs	Beginning of Journey	Just Prior to Need
The Building Blocks of Lean Mfg.	●	●	●	●	●	●	●	●		●	●	●	●	
Managing the Lean Factory				●	●	●							●	
Planning, Leading, and Managing	●	●											●	
Rapid Setup				●			●	●						●
Scheduling Strategies		●	●	●									●	
Inventory Record Accuracy		●	●									●		●
Peak Performance Teams	●	●	●	●	●	●	●	●	●	●	●	●		●
Common-sense Six-Sigma	●	●	●	●	●	●	●	●	●	●	●	●		●
Root Cause Analysis	●	●	●	●	●	●	●	●	●	●	●	●		●
Managerial Problem Solving	●	●		●									●	
Plant Layout For Lean Mfg.				●									●	
Workcell Design		●	●	●	●	●								●
High Reliability Maintenance				●			●				●			●

[1] Belbin, M. (1981). *Management Teams*. London; Heinemann.

Name / Skill	TPS Philosophy	7W	5S	JIT	Standard Work	Visual Management	Kaizen Event	Value Stream Mapping	Kanban
Ben	blue	blue	blue	blue	yellow	blue	blue	blue	blue
Gerry	part blue	blue	blue	blue	blue	blue	blue	yellow	part blue
Jon	yellow	blue	blue	blue	blue	blue	blue	blue	part blue
Kent	blue	blue	blue	blue	part blue	yellow	blue	blue	part blue
Mark	blue	blue	blue	blue	blue	blue	blue	blue	yellow

Activity 1

1. What teams are present in your organisation?

2. What do you see as the benefits to your organisation of working in teams?

3. How are your teams formed? Do they take account of the different personalities or skills in the organisation?

Maintaining good working relationships

Maintaining friendly and co-operative work relationships provides a positive and productive work culture, particularly in workplaces which rely heavily on effective team work. Organisations can only effectively function with co-operation between their members.

In a team working environment, creating good working relationships is essential for success. Ineffective teams can be very frustrating and, at worst, poor relations can cause stress, anxiety and illness. To make relationships more effective, it is important that people are treated with respect. This should be seen as the core of establishing good working relationships.

Key points for creating and building good working relationships

In order to build good working relationships you should consider the following key points:

- Establish that the relationship is important so that all parties will spend time and effort on it. This is especially important in difficult times when everyone needs to pull together.

- Listen effectively to other people and do not judge them. The appearance, behaviour or language used by a person may hinder this non-judgemental approach but should be avoided wherever possible.

- Develop opportunities to share feelings, not simply facts. Relationships are developed when expressions of happiness, anger, irritation, etc are shared. An understanding of others peoples' feelings will influence how you relate, and may impact on what you ask others to do.

- Produce a non-blame culture and work towards resolving difficulties together. Blame rarely produces positive results and often hinders the problem solving process.

The above attributes are considered to be those most likely to produce effective teams.

Problems with working relationships

All working relationships have problems and, as we have seen previously, it is often in the early 'storming' phase that these become most obvious. It is important to understand how these difficulties may arise and what to do about them. The following is a list of common problems that can be experienced in the workplace:

Mistrust and stereotyping — Mistrust is often built up over time, and often because of misinformation and stereotyping people. These activities often lead to mistreatment, with one group or individual being targeted, and may ultimately lead to a breakdown in the team structure.

Blame — Blaming another person or group does not usually resolve the difficulty in question. It is more likely to create a defensive position and does not help in either finding a solution or producing a strong and effective team.

Dismissing opinions or feelings — Occasionally a group can become so focused on the output or problem that the feelings of individuals are not considered. This can alienate people and may ultimately force them to leave the team and possibly the organisation.

Unclear roles and responsibilities — Clarity of roles and responsibilities is important for everyone to understand what is expected of them. Where clarity is not in place misunderstandings can occur, and these can then lead to further problems.

Aggressive behaviours — Often an aggressive behaviour is a response to more deeply rooted problems. These may include a lack of respect or feeling criticised as a result of one or more of the problems highlighted above. A polite and considered request is more likely to be well received than an aggressive demand.

Unsocial behaviour — Some people may not be aware of their unsociable behaviour at work and the impact it has on relationships and interactions with others. Awareness can be increased and positive behavioural changes made, with the provision of relevant strategies and support.

Self interest — Team work relies on the combined knowledge and enthusiasm of the members. If individuals allow self-interest to become dominant, it is likely to adversely affect the performance of the team.

Time and workload pressures — Levels of stress and self-interest increase with greater time and workload pressures. It is therefore important to choose the right time to ask for assistance in order to minimise disruption to peoples' workloads and to have the best chance of getting a positive result.

Dealing with difficulties in working relationships

Successfully dealing with difficulties in working relationships is key to producing an energetic and efficient team and organisation. It is therefore important to understand both what people want and why they want it. The objective to resolving any difficulty in a relationship is to find a way in which both parties can benefit: the classic 'win-win' scenario. In any circumstance, problems must be tackled as soon as they appear to prevent them growing and becoming large enough to cause the team to fail.

The following are suggestions to help resolve some of the more common issues that occur in working relationships.

Improve communications through active listening — One person summarises what she hears the other person say. This technique forces the listener to pay close attention to what is being said and to ask questions if something is unclear. Active listening encourages effective communications, which can be seen to be the basis for all good working relationships.

Take turns in assisting each other — Each member of the team should take a turn in assisting other members. This sharing encourages each of the members and builds up a network of promises. This technique effectively gives and receives assistance and builds relationships at the same time.

Reviews — Reviews are a good way of standing back from the situation and examining what is working and what is not. This can be used in the middle of meetings or projects as a means of improving the remaining time together.

Vision and values — An agreed common vision of what the team and the working relationship are aiming to achieve is a useful way of bringing focus to the group. This vision can usefully be enhanced by also including a number of values or rules that the group will work within. The rules should then be adhered to. If anyone subsequently breaks the rules, having them agreed and written down helps to avoid a personal confrontation.

Teambuilding activities — Teambuilding activities are useful to develop a better understanding of the needs, skills and feelings of the group members. Activities may be done either in a work setting, examining particular aspects of the group, or in an informal setting, where they are aimed more at developing relationships.

Facts and data — Opinions are difficult to dispute, but introducing facts can often resolve issues that might otherwise go on for a long time. Data collection relating to such issues can often elevate the problem from a personal battle between individuals to a problem that needs to be resolved as a group. Data also has the advantage of removing a great deal of emotion from the situation, often the cause of misunderstanding.

Management assistance — It may be necessary to involve others with difficult situations that cannot be resolved on their own. Management has a responsibility for ensuring that working relationships are productive and that issues are resolved. It is important to identify people that you can turn to in the event of problems. These people may include members from human resources, immediate line management, foremen or colleagues in other parts of the organisation.

Activity 2

1. What in your opinion is the biggest cause of difficulty within working relationships?

2. What measures do you use or could be put in place to make sure that these difficulties are overcome?

Oral communications

Oral communications include all forms of spoken communications and are the major ways of transferring day-to-day information. This award asks you to demonstrate three types of oral communication from the list below:

- question and answer sessions
- team briefings
- brainstorming sessions
- problem resolution processes

Further guidance on each of these communication forms is also provided here. It is worth remembering that formal oral presentations are almost universally disliked, mainly because people feel vulnerable and are often unused to public speaking. It is therefore perfectly normal to feel self-conscious and nervous before giving any oral presentation.

Question and answer sessions

It is unlikely that you will be asked to present a formal question and answer session, as this is more likely to be an informal discussion. In either case, there are a few hints that can assist in delivering a good question and answer session.

- Listen to the entire question and consider it before you begin your answer. This is important for you to answer the question that was actually asked, and not what you thought it was about.

- Give yourself time to think about the question and your answer. Pauses can feel very long but are often unnoticed by the audience.

- Answer the question honestly and do not try to fake knowing an answer. Trying to get by often leads to further questions in that area and can quite quickly end with your loss of credibility in the eyes of the audience.

- Ask questions back to those questioning you. This breaks the one-way nature and turns the session into more of a conversation. Asking if your reply answers their question also helps to form a conversation and allows you to expand if the audience needs more information.

Team briefings

Team briefings are ways of passing information down and across the organisation and generally have their own company-specific format. They are generally used by managers and supervisors to talk to teams about performance and/or future activities. Generally they are led by the team leader and take place on a regular basis. The briefing provides a way for information to be passed down to employees but can also be used as a mechanism for generating ideas and asking questions back up the management chain.

Team briefings often take place around a management board, which can provide a useful way for structuring these meetings.

These briefings and boards may include items such as:

- performance measures of quality, cost, delivery
- targets for the day, week, month
- production schedules or programmes
- action lists
- problem solving aids, Fishbone diagrams, five whys
- suggestions

Brainstorming sessions

Brainstorming is a technique designed to generate lots of new ideas. Although its effectiveness is disputed, it is widely used and there are a number of variations. All forms involve groups tasked with generating ideas. To this end, there are generally acknowledged rules that should be adopted when undertaking a brainstorming exercise.

- Brainstorming is done in an open and non-confrontational manner. All ideas are equally valid and judgement is reserved until all ideas have been produced.
- Early stages of brainstorming focus on the quantity of ideas. These ideas are then built on and refined through further analysis and discussion.
- New and/or unusual ideas are particularly welcome. Variations of brainstorming specifically target the promotion of these more unorthodox ideas.

Problem resolution processes

This category covers any oral technique tasked with solving problems. Examples may include conducting interviews or surveys, checking with operatives on their working methods, undertaking 'five whys' exercises or discussing a process with those involved. Due to the broad nature of this category, it is not possible to provide detailed guidance other than to refer to the points identified earlier regarding the creation of good working relationships.

Activity 3

1. What are the benefits of oral communications over the written form?

2. What are the barriers to effective oral communication?

Written communications

There are numerous forms of written communication. This NPA requires you to carry out three forms from the following list:

- maintaining key performance indicators
- adding ideas and actions to team boards
- processing information
- communicating via e-mail/internal network services
- producing briefs or updates

Again, guidance is provided on each of the elements.

Maintaining key performance indicators

Key performance indicators (KPIs) are discussed in more detail in 'Contributing to the Application of Continuous Improvement Techniques (Kaizen)'. Maintaining KPIs include ensuring that they are up-to-date and that all subsequent actions are identified. Examples of maintaining KPIs might include adding actual production values to charts, capturing reasons for failure on a tick sheet, or providing customer satisfaction scores. The KPIs may be displayed in a variety of ways, and you will be required to contribute to maintaining these to keep others informed about your performance.

Adding ideas and actions to team boards

Providing ideas and actions may be part of a regular team briefing or, alternatively, a specific problem solving activity. Team boards typically have specific formats for adding ideas and tracking actions, and you should adhere to these.

Action lists are a useful way of monitoring performance and ensuring that elements are completed. The example above uses a series of four boxes to track progress, using the PDCA cycle as a template, with the actions shown as allocated, in progress, completed or reviewed.

Processing information

This covers a wide range of possibilities to account for using information and providing written reports or summaries. Examples may include presentation slides, progress reports, programmes, client updates, etc. These written documents should be relevant to the improvement project that you are undertaking and assist you in the successful completion of your project.

Communicating via e-mail/internal network services

Not all organisations or employees use e-mail: however, many adopt equivalent paper processes. These processes may include the transfer of documents, supplier and delivery notes, quality inspection check sheets, etc. A number of (mainly larger) organisations store and transfer these documents via an internal intranet service to allow a greater degree of standardisation and control. Showing that you have communicated via any of these formats, or similar, would provide evidence of this requirement.

Producing briefs or updates

These would typically include reports or summaries of work carried out, usually requested by line management. The language used should be clear and concise and employ the correct technical terminologies as appropriate. Briefs may also be used to outline the works to be undertaken or to procure goods or services.

Activity 4

1. Where are the standard document templates stored in your organisation?

Self-check questionnaire

Use this self-check questionnaire to make sure that you now know about contributing to effective team working.

When you have finished, discuss your answers with your trainer.

1. What are the benefits of teams?

2. What difficulties might you see at the norming stage of team development?

3. How can a skills matrix assist an organisation in solving problems?

4. How might you deal with problems with your team's relationships?

5. How can data be used to help resolve disagreements?

6. What types of oral and written communications do you use in your workplace?

Unit F1SD 04: Contributing to the Application of Workplace Organisation Techniques

Introduction

About this Unit

This Unit is designed to help you carry out a systematic approach to continuously making improvements to workplace organisation. It involves you carrying out the principles and techniques of a workplace organisation activity. An example would be you undertaking a 5S or 5C activity (sort, straighten, scrub, standardise, self-discipline; clear out, configure, clean and check, conformity, custom and practice). You will need to make recommendations for the creation of, or make changes to, standard operating procedures and visual controls that everyone works to.

The overall objective of contributing to the activity will be to improve the condition of the working environment and, in doing so, establish a new, improved area score.

Key areas of performance

In order to successfully complete this Unit, as a competent person, you must:

- work safely at all times, complying with health and safety and other relevant regulations and guidelines
- use workplace organisation techniques and establish the area score
- identify where information, resources or equipment are missing or in surplus and where improvements can be made
- make recommendations for the creation of, or make changes to, standard operating procedures (SOPs) and visual controls that everyone works to within the area
- make agreed improvements to the workplace organisation and establish and agree the new, improved area score

Key areas of knowledge and understanding

This qualification will help you to develop the following key areas of knowledge and understanding:

- the health and safety requirements of the area in which you are carrying out the workplace activity
- the factors to be considered when selecting a work area for an activity
- the procedure to identify and address surplus or missing equipment
- how to label and arrange resources or equipment
- how to make recommendations to create or amend SOPs
- how to score and audit the workplace organisation

- how to communicate information using visual systems
- who you should report to if there are any problems that you cannot resolve

Regulation, rules and guidelines

To carry out the work to achieve the requirements of this Unit you must work safely at all times, complying with health and safety and other regulations and guidelines. You should read and get to know the following regulations, rules and guidelines before starting any tasks associated with this Unit to ensure that you are working in the required safe manner:

- your organisation's rules, codes, guidelines and standards relating to health, safety and security
- equipment handling procedures
- handling and lifting techniques
- correct use and maintenance of any protective clothing and/or equipment
- the responsibilities under the Health and Safety at Work Act and Control of Substances Hazardous to Health (COSHH) Regulations
- your industry's specific requirements
- specific equipment instructions relating to your role

About this learning and teaching pack

This part of the learning and teaching pack is designed to help you develop the knowledge and understanding and generate the evidence required to pass this Unit.

It is divided into the following sections:

- Workplace organisation techniques
- 5S/5C
- SOPs for workplace organisation
- Visual controls for workplace organisation

Each section contains information and follow-up activities to help you apply what you have learned. At the end of this Unit there is a self-check questionnaire to help you check your knowledge and understanding so far. You should discuss your answers with your trainer.

Workplace organisation techniques

Introduction

Good workplace organisation is central to many Kaizen activities and is often the starting point on a programme of continuous improvement. We are all aware of the problems that an untidy workplace produces:

- clutter and obstacles that prevent work flow.
- a poor image for people viewing the premises.
- time wasted searching for things.
- plant and equipment are not positioned to support efficient working.
- materials and products are more likely to be damaged.
- over-production or over-ordering issues are more likely.
- potential health and safety issues.
- it is difficult to see the status of things and stock levels.
- inefficiency or waste.

These and other issues are reasons for applying good workplace organisation, and all link back to eliminating waste from the process.

In many manufacturing organisations, workplace organisation has become known as 5S. This qualification will provide guidance on the use of this tool but also include other examples of good workplace organisation techniques. Other forms of workplace organisation are acceptable substitutes for 5S, as long as they lead to improved and sustainable benefits to workplace organisation.

Possible workplace organisation techniques other than 5S

This candidates' pack will examine 5S in detail as it is the main tool used to improve workplace organisation. This section will examine those other tools and techniques that you may wish to use either in place of, or in addition to, a 5S activity. If you choose to use one of these techniques, you should discuss it with your tutor to ensure that all of the requirements of the Unit are covered.

Work plans and programmes

Accurate and detailed work plans and programmes can greatly enhance workplace organisation via better co-ordination of work, improved flow of products, services and materials, and increased productivity and efficiency. The production of works schedules or programmes may reduce the number of deliveries or the quantity of work in progress or inventory, and therefore reduce many process wastes.

To be awarded the qualification, you should consider how your work plan or programme can be used to identify where materials or information is missing. It may be possible to demonstrate this by annotating the works programme or using it as a means to check the actual performance. The photograph below shows a weekly work plan that has been used on a construction site to firstly plan the week's activities, and then check on its achievement.
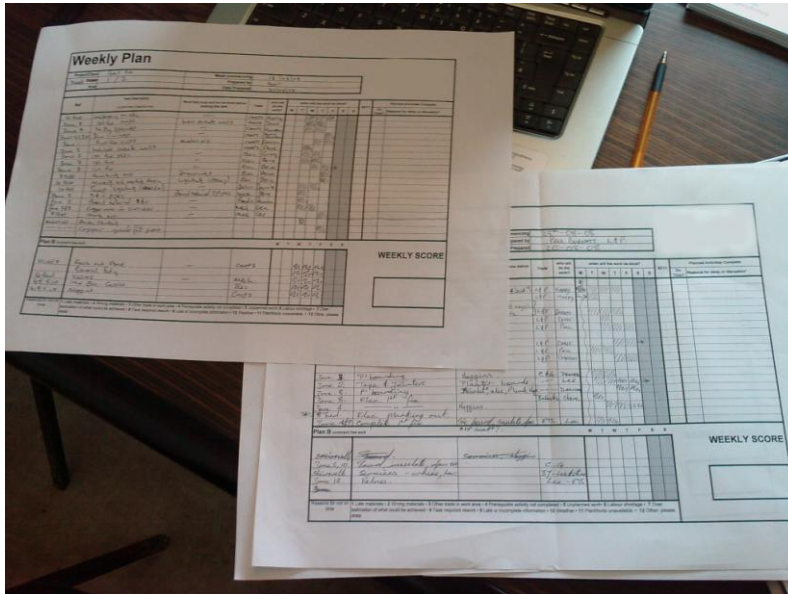

These plans can be used to collect data on the reasons for not achieving activities, and form the basis for many improvement activities. These are also used as standard operating procedures and visual controls to provide information to the workforce on the site. Similar plans have been successfully used in other industry sectors, and you may wish to use them as part of a workplace organisation and planning activity.

Work area layouts and spaghetti diagrams

The simplification or improvement of a work area is tackled as one of the steps in a 5S activity. However, you may wish to focus in detail on this aspect as part of your improvement project. Improvements to work layouts can provide dramatic benefits to work flow, including information systems. Although much of today's communication is electronic, ordering the location of people in relation to work flow process still provides a significant benefit.
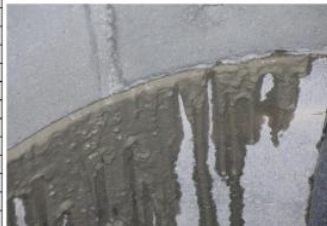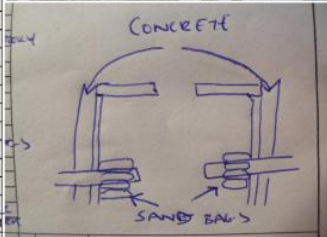
One method of examining work flow and its relation to the layout is through the use of spaghetti diagrams. These use a layout plan which is then marked up, showing the path that information or physical objects take when moving through that works area.
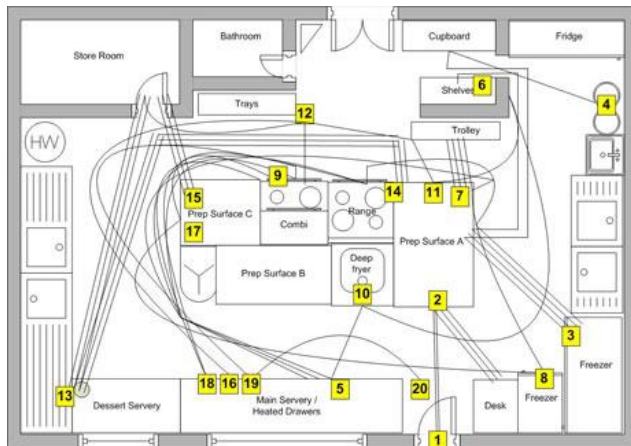
Spaghetti diagrams produce a good visual representation of the flow of work and how it is organised. They can also be used to assess the efficiency of the workplace by examining the number of times that the information or product is passed back and forth. Direct observation of the workplace can provide the details used to produce the diagrams, as well as timings to assess the amount of waste that is present.

Standardised work

Workplace organisation attempts to standardise and sustain, and this can be achieved through the use of standardised work. This brings together all of the current working methods and combines them into one best method. This best method can be seen as the organisation of the workplace in terms of its methodology, use of materials and equipment, tests and inspections that are required, etc.

Working Sequence Element	Construction of Manholes in wet ground		ISSUE DATE	05/12/2005		ORIGINATOR	CHECKED	AUTHORISED
	Job Detail Sheet		ISSUE No.	1		AY	BZ	CD
			SECTION / PROCESS					

No.	MAJOR STEP	KEY POINT	KEY POINT REASON: ✚ Safety ◆ Quality ● Ease	PHOTO / S K E T C H
1	Check Specification. Mark outline and check for Services	Right Materials	◆	1. Problem areas--poor concrete (incorrect slump)
		Use Cat scanner and any existing plans to detect services	✚	2. Not pokered properly.
2	Order Concrete then excavate to 1metre deep	Order C35 type to 40 slump	● ◆ C35/40 slump better concrete and easier to use.	3. Sump pump stopping before concrete cured.
		Use PPE for disc saw	✚ Noise--Dust--Eyes	4. Insufficient seal around pipe
3	Place in shoring or batter back to 45 degrees. Excavate to required level.	Safety	✚ Crushing from Trench collapse.	
4	Blind with 50mm thick of clean stone and create sump for de-watering.	Dig Sump Hole with Pipe---Use Pump with min. 24hr operation	◆ To stop water infiltration washing away concrete causing defects	
			● To provide cleaner working condition.	
5	Cut notch in manhole ring to fit diameter of pipe. Place ring on packing bricks.	To calculate width of notch add 30mm to diameter of pipe.	◆ Minimum clearance/better seal	
		Mark out ring from the inside. Use engineering bricks only.	◆ Consistancy and bricks must be non-porous.	
		Use correct lifting equiptment.	✚	
6	Place mortar between rings. Place cover slab with mortar bed.	Use 4 to 1 mix	◆ weak mortar may leak water.	
7	Place steel shutter around ring.	Make sure an even gap is maintained between ring and shutt		
		Use timber packers (4x2) to maintain correct gap	◆ Maintain correct thickness of concrete.	
8	Provide safe access to work area and place sandbags around pipe.	Use handrails and platform + deck over opening in m/h cover	✚ Falls from height.	
		Sandbags used to form seal around pipes for concrete. Make sure correctly placed.	◆ To stop water infiltration. Must be packed tightly.	
9	Checks slump of concrete before use.	Perform slump test ----see attached sheet. Slump to be 40mm	◆ Vital for concrete performance.	
10	Pour concrete and compact with poker. Check levels and that pump is working.	Evenly pour concrete in levels of 300mm at a time. Poker till can be seen around pipe and ring joints. Make sure sump pump continues to operate and can do for 24hrs.	◆ see picture	
			◆ if pump fails water will wash away concrete, work will be defect	
11	Strip shutters then backfill. Brick up & bed cover. Re-instate area.	Make sure concrete has cured.	◆	
		Brick to correct level.	◆	
		Tidy site.	✚ no trip hazards	

| | | REV.DATE | CONTENT OF REVISION |

PPE REQUIRED: (Write specification)	Eye Protection	Ear Protection	Foot Protection	Head Protection	Hand Protection	Respiratory Protection	Other PPE
	Ssfety goggles and ear defenders		MANDATORY	MANDATORY	MANDATORY	Wear Dust masks and dampen materials to be cut.	

A good standardised work document also uses visual controls to provide clarity, and can be used as an audit tool to ensure compliance to the current best method. The example above is a standard work document for the construction of a manhole in wet ground. It documents the best current method used by a company in relation to safety, quality and ease.

Activity 1

1. What do you see as the benefits of maintaining a good work area?

2. What are the barriers to having good workplace organisation?

5S/5C

The tool 5S, also known as 5C, is one of the foundations of lean improvement. It is often seen as simple housekeeping or tidying up, but is actually a technique designed to eliminate the wastes of transport, inventory, defects and much more. It can be defined as a structured method for achieving, maintaining and improving the standard setup, organisation, layout and control of a work area, so as to ensure safe and efficient operations with minimum waste. 5S requires a change in the mindset of the organisation, as well as a physical one to the workplace. The first steps introduce the physical improvement, with later stages becoming increasingly management-orientated.

The concept of 5S/5C is generally regarded to have originated in the Japanese automotive industry. It is considered one of the fundamental building blocks for an organisation striving to establish lean practices and a culture of continuous improvement. The original 5S has been translated from the Japanese into a number of different Western forms, as shown in the table below.

5S Japanese Version	5S English Version	5C English Adaption	CANDO American Adaption	Basic Meaning
Seiri	Sort	Clear out	Clearing up	Separating the essential from the non-essential
Seiton	Staighten (or simplify)	Configure	Arranging	A place for everything and everything in its place
Seiso	Scrub (or Shine or Sweep)	Clean & Check	Neatness	Keep things clean and in good working order
Seiketsu	Standardise	Conformity	Discipline	Set the 5S / 5C standard and sustain
Shitsuke	Self Discipline	Custom & Practice	On-going improvement	Consistent application, training, everyday routine and advancing the 5S / 5C standard

The five steps are discussed in the following sections. However, the best method of learning 5S is to go and do it, and you may wish to discuss carrying out a physical activity with your trainer.

Sort/clear out

The first stage is to sort out the essential and used items from the rubbish or rarely used ones. Non-essential items create clutter, take up space and can create unsafe working conditions. Large amounts of materials or equipment can also hinder you from finding essential items quickly, as well as hiding defects.

In order to sort the workplace, it is usual to identify areas that the removed items will go into: a keep area, a quarantine area and a rubbish/recycle area. When equipment is removed, it should be inspected and tested to ensure that it is working. Any faulty equipment or items that the team are uncertain about should be 'red tagged'.

TAG NO:

ISSUE DESCRIPTION

DATE

INITIALS OF ORIGINATOR

COUNTER MEASURE + TARGET DATE

A red tag is an indicator that something needs to be done before the item is put back or thrown away. An example red tag is shown above; these should be kept within the work area together with a log of the red tag issues.

It is quite common to find large amounts of materials, tools and equipment during the sort stage that can be reused or sold. This exercise often pays for itself in the first stage. The sort stage may need to be undertaken on a routine basis until the culture of the organisation has changed to one that can maintain the improvements of the other four steps.

Straighten/configure

This step can be best described as 'a place for everything and everything in its place'. In other words, the orderly organisation of those items that are necessary to complete the work activity, in a way that ensures safe and efficient operations which can be repeated with minimal waste. This step accounts for the frequency of use of the items, the ergonomics of lifting and bending, and the flow of work within the area.

Visual management techniques can be applied during this step to help ensure the area is maintained and that materials and equipment levels are correct. Some examples of visual management techniques are shown below to help you apply your own to your work area. It is important to consider stock and re-order levels during this stage to make sure that sufficient space is allocated. Simple systems can be put in place to assist in ordering, including wall markings, labels and tags.

Labelling   Shadow boards   Re-order labels

Replenish levels	Floor markings/quarantine areas	5S boards

One of the simplest ways of managing small items is to adopt a two-box system. Items are taken and used only from the first box until it is empty. At this point items are then taken from the second box and an order is placed to replace the stock. This method ensures that the minimum quantity is carried and ordered, minimising inventory, but the item is always available when needed.

Scrub/clean and check

The third step is the first of the management activities and is designed to keep everything in good order. The scrub regime will include an audit and physical tidy to maintain the workplace in the same standard as it was after the previous steps. Ideally the scrub step should be carried out on a daily basis by those using the workplace area. This process will create ownership of the area by those working in it, and highlight issues before they become critical. Red tags are again used to identify any issues within the workplace.

This step must be enforced during the initial introduction of a 5S programme to ensure that the improvements are maintained. Unless policed, the area is likely to quickly revert back to its original state and the benefits will be lost. One method of ensuring that the scrub step is undertaken is to produce a sign-off sheet and identify who is responsible for doing the scrubbing and who will enforce the activity.

Standardise/conformity

The fourth step is predominantly a management activity to maintain the standards set in the previous three steps. A standard work approach may be used to ensure that these steps are maintained; alternatively, forms, diagrams, check lists and roles and responsibilities can be adopted.

This step should introduce a process by which the 5S standards can be maintained, and would typically include:

- pre-work setup checklists
- displays of how work tasks should be done

- displays of the 5C standard of the workplace

- defining how the 5C standard is to be maintained (eg clean and check rota)

- visual methods to show the location of necessary items

Organisations which have 5S as their foundation for continuous improvement often use 5S boards to standardise the process. These boards provide all of the information required to maintain the standards, together with audit results and improvement measures.

Self-discipline/custom and practice

The final step deals with ensuring consistent adoption and use of 5S by all personnel who are either involved directly with the workplace or who interact with the workplace. This step moves from the adoption of specific tools to an approach that changes minds. Its aim is to make people want to keep applying good practice in organisation and housekeeping and then apply continuous improvement to it.

The successful adoption of a 5S regime can be seen as a mixture of physical actions, management activities and a change in the culture of the workforce. Many companies that claim to do 5S only complete the first stages and regularly need to revisit these to achieve a reasonable level of workplace organisation. These stages are relatively easy to do but do not provide the large benefits that achieving all five stages will.

The table below provides a method of auditing an organisation's approach to 5S. This can be a useful tool to identify where the organisation is and where it can get to in deploying this tool.

	SORTING	SIMPLIFYING	SWEEPING	STANDARDISING	SELF-DISCIPLINE
LEVEL 5 Focus on Prevention	Employees are continually seeking improvement opportunities.	A dependable, documented method has been developed to provide continual evaluation, and a process is in place to implement improvements.	Area employees have devised a dependable, documented method of preventive cleaning and maintenance.	Everyone is continually seeking the elimination of waste with changes documented and information shared.	There is a general appearance of a confident understanding of, and dherence to, the 5S principles.
LEVEL 4 Focus on Constistency	A dependable, documented method has been established to keep the work area free of unnecessary items.	A dependable, documented method has been established to recognise in a visual sweep if items are out of place or exceed quantity limits.	5S agreements are understood and practiced continually.	Substantial process documentation is available and followed.	Follow-through with 5S agreements and safety practices is evident.
LEVEL 3 Make it visual	Unnecessary items have been removed from the workplace.	Designated locations are marked to make organisation more visible.	Work/break areas and machinery are cleaned on a daily basis. Visual controls have been established and marked.	Working environment changes are being documented. Visual control agreements for labelling and quantity levels established.	5S agreements and safety practices have been developed and utilised.
LEVEL 2 Focus on Basics	Necessary and unnecessary items are separated.	A designated location has been established for items.	Work/break areas are cleaned on a regular scheduled basis. Key items to check have been identified.	Methods are being improved but changes haven't been documented.	A recognisable effort has been made to improve the condition of the workplace.
LEVEL 1 Just Beginning	Needed and not needed items are mixed throughout the workplace.	Items are randomly located throughout the workplace.	Workplace areas are dirty, disorganised and key items not marked or identified.	Workplace methods are not consistently followed and are undocumented.	Workplace checks are randomly performed and there is no visual measurement of 5S performance.

5S in non-physical environments

5S can be effectively applied to information and computer systems, though at times the implementation requires a degree of lateral thinking. Where the workplace is predominantly electronic, you can consider using the activity on the filing structure or document handling system. In these circumstances, regularly used files can be separated from files that are not used or are rarely used. Red tag folders can be established if the importance of files is unknown or if the information is believed to be out-of-date or has been superseded. Visual controls can again be used by colour coding different files or operators, and screen shots can be used to produce standard operating procedures.

If you are involved with a service or information environment you should discuss the implementation of a 5S activity with your tutor before you start.

Activity 2

1. At what step of a 5S activity do you believe that management has the biggest role to play? Explain your reasoning for this.

2. Why do you think many workplaces revert back to their original state six months after the initial 5S activity?

SOPs for workplace organisation

Standard operating procedures are used in workplace organisation in a variety of ways. To satisfy the requirements of this qualification, you will need to demonstrate that you have made recommendations for the creation of or changes to SOPs. These recommendations do not need to have been implemented for you to show competency for this Unit. However, it is hoped that they will be introduced at some point.

The list below provides guidance on what changes you may introduce, but naturally the exact nature will depend on your workplace organisation activity. You are required to identify recommendations from two of the categories below.

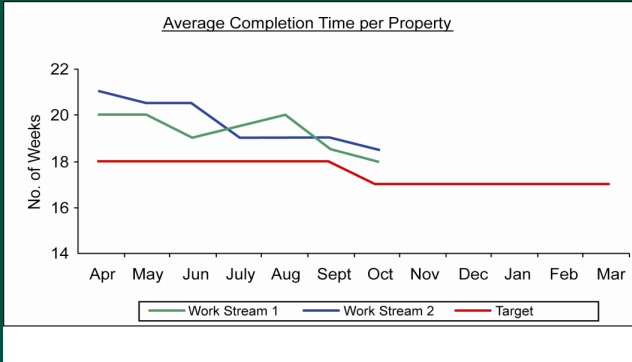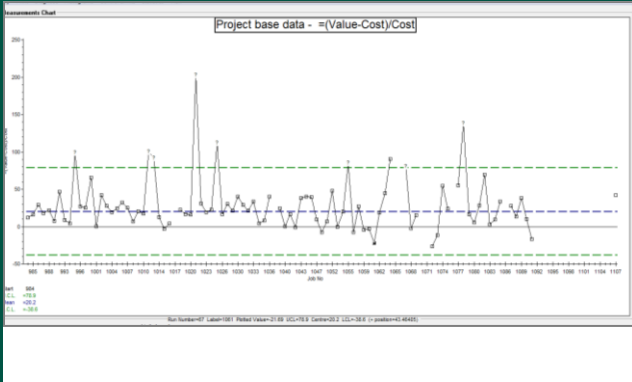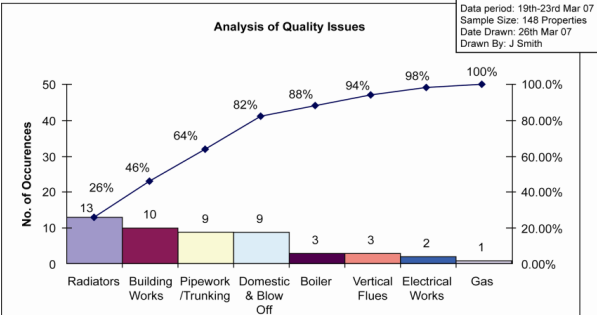| Category	Possible recommendation
Cleaning of equipment or work area	- create an SOP for cleaning equipment - make changes to the cleaning regime - produce an audit check sheet - amend layout diagram
Maintenance of equipment	- create an SOP for maintaining equipment - make changes to the maintenance regime
Health and safety	- identify the health and safety aspects on an existing SOP - produce a health and safety audit of the workplace - identify health and safety hazards and produce an SOP for mitigating their impact
Process procedures	- produce a new work flow to suit the revised work layout - amend existing SOPs to include additional stages of a 5S activity
Operations/working processes	- amend an existing operations manual to allow regular cleaning to take place - identify the roles and responsibilities of those people who interact with the workplace
Quality systems	- identify amendments to quality systems to include the new regime - provide details of new check sheets so they can be incorporated in quality systems
Regulatory compliance systems	- mark on existing SOPs where compliance checks are required - produce a timetable of when regulatory checks need to be carried out on equipment or materials - produce a skills matrix of those qualified to undertake compliance testing

Activity 3

1. How can SOPs be used to improve the workplace organisation?

Visual controls for workplace organisation

Visual controls form a major part of any improvement to workplace organisation. This qualification asks you to make recommendations for the creation of, or make changes to, two types of visual controls. The following list again provides guidance and examples on how you may satisfy this criterion.

Category	Example	Guidance
Shadow boards or racking system		• Use visual management to identify where items are missing • Consider ergonomics and frequency of use when designing racking systems • Use colours and signs to make identification easier
Colour coding	**Colour Coding for Hygiene** As recommended by the British Institute of Cleaning Sciences General Low Risk Areas — Blue Sanitary Appliances and Washroom Floors — Red Washroom Surfaces and Hand Basins — Yellow General Food and Bar Areas — Green Always use two colours within the washroom area. This greatly reduces the risk of cross contamination.	• Use different colours to denote different areas • Footprints can be used to identify observation points to undertake audits • Colour can be linked to regulatory or organisational standards

Line status systems		• Red, amber, green charts provide good visual status displays • Colours and simple signs are more effective than text in displaying messages
Skills matrix		• Skills matrices can be used to display the roles and responsibilities of those involved in workplace organisation or indicate who has been trained in techniques such as 5S
Performance measures		• The performance of the workplace may be displayed either numerically or graphically
Process control boards		• Analytical tools are sometimes used to see if processes, and therefore workplaces, are in control

Improvement systems		• Data collection systems on workplace organisation and analysis, such as Pareto or spaghetti diagrams, are contained within this category
Planning systems		• Programmes or work schedules can be highly effective in organising a workplace and can be produced in a variety of formats

Self-check questionnaire

Use this self-check questionnaire to make sure that you now know about contributing to effective team working.

When you have finished, discuss your answers with your trainer.

1. How can workplace organisation be used as part of a wider improvement initiative?

2. Identify and describe the process wastes associated with poor workplace organisation.

3. How might spaghetti diagrams be used to identify problems in the workplace?

4. How does a 5S exercise improve workplace organisation?

5. How are visual controls used to improve workplace organisation?

Unit F1S1 04: Contributing to the Application of Continuous Improvement Techniques (Kaizen)

Introduction

About this Unit

This Unit is designed to help you undertake improvement activities in your workplace and produce measurable benefits. It involves contributing to the planning of the continuous improvement process, carrying out activities to make improvements and recording business benefits.

Key areas of performance

In order to successfully complete this Unit, as a competent person, you must:

- work safely at all times, complying with health and safety and other relevant regulations and guidelines
- contribute to the planning of an improvement activity
- identify process waste, problems or conditions where improvements can be made
- carry out a structured improvement activity based on the identified process wastes
- make recommendations for the creation of, or make changes to, standard operating procedures (SOPs)
- provide comparisons of before and after the continuous improvement activity using key performance indicators

Key areas of knowledge and understanding

The qualification will help you to develop the following key areas of knowledge and understanding:

- how a work area is selected for improvement activities
- the principles and deployment of continuous improvement activities
- the eight process wastes and how to eliminate them
- how to carry out a structured improvement activity and establish measurable benefits
- how to establish fact from opinion
- how to encourage others to identify potential improvements
- how to evaluate improvement ideas
- how to undertake improvement activities in a team environment
- how to keep others informed of the progress of the improvement activities

- how to make recommendations for the creation or changes to standard operating procedures
- how to quantify and measure improvements and display these visually

Regulation, rules and guidelines

To achieve the requirements of this Unit you must work safely at all times, complying with health and safety and other regulations and guidelines. You should read and get to know the following regulations, rules and guidelines before starting any tasks associated with this Unit to ensure that you are working in the required safe manner:

- your organisation's rules, codes, guidelines and standards relating to health, safety and security
- equipment handling procedures
- handling and lifting techniques
- correct use and maintenance of any protective clothing and/or equipment
- the responsibilities under the Health and Safety at Work Act and Control of Substances Hazardous to Health (COSHH) Regulations
- your industry's specific requirements
- specific equipment instructions relating to your role

About this learning and teaching pack

This part of the pack is designed to help you develop the knowledge and understanding and generate the evidence required to pass this Unit.

It is divided into the following sections:

- Continuous improvement (Kaizen)
- Work and waste
- The eight process wastes
- Planning and carrying out a Kaizen activity
- Problem solving tools and techniques
- Measurement
- Standard Operating Procedures
- Sustaining the improvements

Each section contains information and most have follow-up activities to help you apply what you have learned. At the end of this Unit there is a self-check questionnaire to help you check your knowledge and understanding so far. You should discuss your answers with your trainer.

Continuous improvement techniques (Kaizen)

Introduction

Kaizen is a Japanese word meaning improvement but is now widely used as a term for continuous improvement in business activities. It is difficult to establish when Kaizen was first used in its current meaning, but many believe that it was in the 1950s in the Japanese automotive sector. Since then it has been applied in many different sectors across the world to produce business benefits.

There is no standard definition of continuous improvement, although many see it as the basis for a number of improvement management systems including: the Toyota Production System; Lean Improvement; Systems Thinking and Business Process Re-engineering, and others. This NPA will use a generic definition of 'the repeated application of improvements within a structured approach' and is closely associated with Lean techniques.

Continuous improvement can be thought of as the repeated application of improvements, each time making the product or service better. Many organisations try to make large-scale changes that take considerable effort and resource. Kaizen activities on the other hand are generally small, require little time or effort, and make relatively small changes. The benefits of a Kaizen approach are that improvements can be made quickly and simply, and avoid major disruptions that often occur with other large projects. In this way, a large number of small improvements add up, over time, to a large improvement without the disruption and cost of trying to do it in a single step.

The philosophy of continuous improvement

Continuous improvement is more than a collection of tools and techniques; it is a philosophy, a way of thinking as well as working. Organisations which have successfully applied continuous improvement have spent considerable time and resources — it is not an easy or quick fix. Organisations about to embark on continuous improvement should consider the following points.

Strategy — What is the long-term goal for the organisation? How does it deal with its customers and employees? What does it see as its growth strategy?

Processes — Is the organisation committed to improving its processes? Does it see the elimination of waste as critical?

Problem solving — Is the organisation a learning environment? Does it routinely improve its operations?

People — Does the organisation encourage and develop its workforce? Does it have strong links with its suppliers and customers? Does it have strong and committed leadership at all levels of the business?

Continuous improvement organisations improve their processes and operations as part of their standard 'day job' and do not see it as an add-on. *Lean Thinking*, written by Womack and Jones, identified five principles that applied to a particular aspect of continuous improvement known as 'Lean'. These principles have been adopted as the foundations of transforming organisations and are reproduced below.

Value	Specify value from the point of view from the customer. This means ensuring that the product or service offered meets the needs of the customer and is not necessarily what is easy to produce. An organisation can be the most efficient, world-leading, manufacturer but if it is producing products that no-one wants it will soon go out of business.
Value stream	This is the sequence of activities or processes that takes raw materials or information through to the final product. This applies not only to the individual organisation but the whole supply chain. The principle is to make this value stream as efficient as possible, involving everyone in the process.
Flow	Once the value stream has been identified, the objective is to make it flow. This means trying to keep the product or service moving and avoiding delays.
Pull	In contrast to pushing products to customers, pull provides the product or service at the same rate as the customer demands. This ensures that over-production is minimised and the ability to respond quickly to customer changes is maximised.
Perfection	This is an aspiration, achieved by adopting the previous four elements. Perfection requires continuously improving the product and service.

These principles can be applied to all improvement projects and provide the basis for many improvement methodologies.

The Continuous Improvement Cycle

The Continuous Improvement Cycle is also known as the Shewhart Cycle, Demming Cycle or PDCA Cycle. It provides the approach for carrying out improvement activities and is shown below:
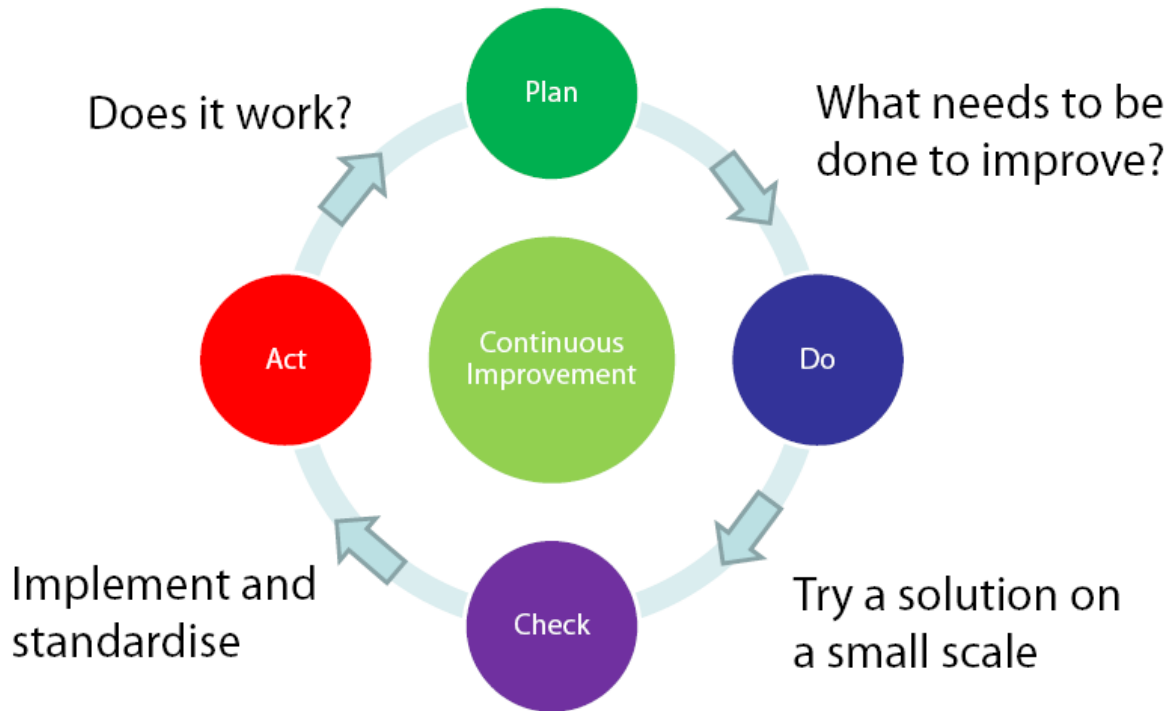
The principles of the Continuous Improvement Cycle are to:

- **Plan improvement** — including how to communicate the project, set objectives and collect and analyse data.

- **Do the improvement** — generally this is on a small scale or pilot project.

- **Check the output** — review the project to see if the objectives were met. What were the lessons that could be learned for the future?

- **Act on the results** — often making sure that the improvements stick, and that future projects benefit from the new understanding which will be used in planning the next round of improvements.

Most organisations do not follow the whole of PDCA Cycle but tend to focus on the **Plan** and **Do** parts. The result of this is that very few lessons are learned from previous projects and mistakes are made over and over again. It will be necessary for you to show how you have used the PDCA Cycle in your improvement project and how your have checked and acted on your findings. You will need to demonstrate that you have gone around the PDCA Cycle three times to satisfy the requirements. You should discuss with your trainer how your improvement project will demonstrate this repeated application.

Activity 1

1. What do you see as the benefits of following the PDCA Cycle when doing an improvement project?

2. Can you think of any projects that you have been involved in and have they followed the PDCA Cycle?

3. Who would you need to involve at the plan stage of an improvement project?

Work and waste

It is possible to make improvements to an organisation in a number of ways. Often this is done by buying new machinery or technology, or through training staff so that they can work more efficiently. It is important, when you start a project, to identify how the improvements are going to be made. This can be difficult to do, especially if the process is complicated and you do not have a good understanding of the different types of activity that make up a work day.

We often see people that are very busy, usually running around trying to fix problems, and mistake this kind of activity for work. Continuous improvement projects focus on getting rid of problem areas or issues so that more beneficial work can be done. It does this by splitting activity into two parts: value adding work, and waste.

A basic skill that you will need to carry out an improvement project is to identify value adding work and waste (defined below) and produce a plan to eliminate the waste. Your project will then work to eliminate the waste and provide evidence of the improvement by comparing the before and after situations.

Value adding work

Value adding work is where something changes to get closer to an end product that the customer will pay for. Examples of this might include:

- a car door being put into its frame in a factory
- a hospital bed being made ready for the next patient
- a bricklayer laying bricks in a new wall
- a technician installing a new piece of IT software

All of these activities are seen to add value to a process or product, and people would expect to pay for these activities either directly or indirectly. Generally value-adding activities are also what people enjoy doing and view them as what they get paid to do. Historically a lot of attention has been paid to improving the production of value adding elements in an attempt to make people produce things quicker. Time and motion studies tend to focus on this aspect of the work to find ways to improve the efficiency and reduce the time taken to produce the work. Kaizen techniques, in contrast, look to simplify the value-adding work and reduce or eliminate the other activities that add no value.

Waste

Activities that do not add value are classed as wastes, those things which the customer does not want to pay for. They are generally those activities that annoy you when you are doing your work and wish that you could do without. Continuous improvement projects focus on removing these wastes so that there is more time to do the value adding work. Taiichi Ohno, one of the founder figures of the Toyota Production System, originally produced a list of seven wastes. These wastes have since been built upon and this qualification categorises eight forms of waste that we can identify and try to remove.

The elimination of waste is done using a systematic methodology, working with data to analyse the amount of waste present and identify opportunities for its reduction or elimination. The PDCA Cycle is used to make sure that the waste is removed and that lessons are learned which can be used to continue the improvements.

Activity 2

1. What are the value adding activities that you do in your job?

2. How much time do you think you spend on value adding activities and waste activities in a typical day?

The eight wastes

The eight wastes are outlined below and can be remembered by the acronym TIM P. WOOD.

Transport
Inventory
Motion

Poor utilisation of knowledge

Waiting
Overproduction
Over-processing
Defects

It is important to be able to identify and eliminate these eight wastes to produce business benefit. Each of these wastes will now be examined in more detail to help you spot them in your role and organisation.

Transport waste

What is it?

The waste associated with moving materials, information or people. Some transport will be necessary but where the distances become very long there is the opportunity to remove some of this waste. Large amounts of transport waste tend to result in long waiting times and

a greater chance that materials will be damaged in transit. Double handling of materials is also classed as transport waste. This is where materials are laid down in one area only to be moved again and laid down a second time.

In an information or service context, transportation may be seen as the distance reports travel within the office environment or miles travelled by people. Where there are large distances between companies that require regular meetings there is an obvious waste of excessive travel time. These travel considerations are also increasingly being viewed with regard to their environmental impact and CO_2 emissions.

What is it linked to?

Large amounts of transport waste are often a result of poor planning and communication. Materials are often placed in areas based on availability — not on where they will be needed. People also often need to walk long distances to collect materials or to clarify a piece of information.

Transport is most often associated with the wastes of waiting and defects.

What does it look like?
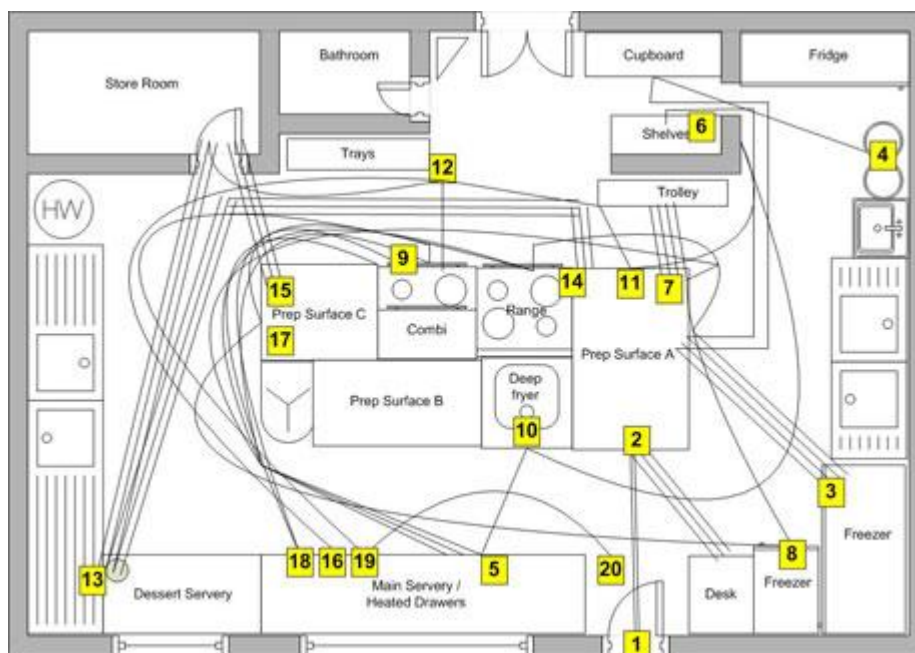
How do you spot it?

You can generally spot transport waste by directly observing a process and monitoring the distances that materials, people and information travel through. This can either be done physically or by using plans and layouts. Spaghetti diagrams are useful ways of showing graphically the movements taking place in a location to identify whether it is efficient. To create a spaghetti diagram you simply mark on a plan the observed movements using different colours or line-styles to show different products, materials or people.

Inventory waste

What is it?

The waste associated with having too much, either materials, tools or work in progress. Although some level of inventory is always necessary, large volumes can lead to problems with cash flow and bad quality. Large levels of inventory make it difficult to spot problems, and hides issues associated with poor planning, communication and processes.

Just-in-time (JIT) is used mainly in the manufacturing industry to remove excess levels of inventory. This shows up problems that inventory tends to hide and forces organisations to tackle the root causes of inefficiencies.

What is it linked to?

Large amounts of inventory waste are often a result of poor planning and inefficiencies in processes. Inventory tends to be used to cover up problems such as supplier difficulties, machine reliability problems and work preferences.

Inventory is most often associated with the wastes of waiting, defects and over-production.

What does it look like?

How do you spot it?

You can generally spot inventory waste by directly observing the works area and looking for large levels of material inventory. The inventory could be raw materials, part-finished goods or work in progress, or completed products. Large numbers of tools being carried by workers should also be investigated against the frequency of their use.

Motion waste

What is it?

The waste associated with poor ergonomics, the science of how people interact with their environment, or badly designed machine operations. This waste is often overlooked as it is usually made up of very small inefficiencies repeated many times during the course of the day. Wherever people are bending, stretching, lying on their back, or reaching above their head, motion waste is present.

Motion waste is closely related to occupational health, as many of these unnecessary movements result in detrimental health effects.

What is it linked to?

Large amounts of motion waste are often present because no-one has asked those doing the task if there is a better way of working: the waste of poor utilisation of knowledge. Eventually motion waste will lead to defects, or at least to a reduction in quality levels, as the person tires or becomes uncomfortable.

Often motion is also linked with transport waste but the two should not be confused. Generally motion waste is taken as the movements of the person or machine within a small area, and transport waste associated with larger travel distances.

What does it look like?

How do you spot it?

The easiest way to identify motion waste is to ask the person doing the task if they are uncomfortable. This is a good indicator of motion waste and can usually be seen by standing back and observing the person doing the work. In a machine environment, direct observation and the use of video can also show up motion waste where unnecessary strain is put on the equipment.

Poor utilisation of knowledge waste

What is it?

The waste associated with not using the skills and experiences of the people doing the tasks that are being improved. This waste is again often overlooked, especially at management level, because there is generally no way that feedback can be provided by the workers and then acted upon. Many organisations do not ask those doing the work to get involved in the problem solving or waste elimination activities as they believe that these are solely the responsibility of senior management.

Many management action plans fail because of this lack of input from those involved in producing the work. The management therefore do not get the 'buy-in' for the plans to be successful. A major study in the 1980s showed that one of the key reasons for Japanese automotive manufacturers outperforming their competitors was their ability to collect ideas from the shop-floor. This study identified that, on average, the Japanese had 62 suggestions compared with one in Western organisations.

What is it linked to?

The waste of poor utilisation of knowledge is naturally linked to all of the other seven wastes. These are likely to remain if people with the hands-on experience are not consulted for their ideas and recommendations. The success rates of improvement activities are also reduced without the input from those doing the work, and this can quickly lead to resentment and reduced morale.

What does it look like?

How do you spot it?

It is difficult to spot this waste directly but it can be seen by the lack of feedback and low levels of morale among the workforce. Generally the best way of spotting this waste is to ask employees whether they have ideas for how to improve their jobs, and how these are taken and used.

Waiting waste

What is it?

The waste associated with waiting for materials, information, equipment, people to complete previous tasks, etc. This is often one of the largest wastes in any organisation or process because of the potential knock-on effects that waiting can have. In a factory environment, a delay at a particular workstation or machine can delay the whole of the production line. Similarly, on a construction site or in an office environment, waiting for someone to complete their task can have a major implication on whether the overall activity is completed on time.

The waste of waiting generally results from the poor flow of the value-adding work. Flow can be thought of as how the product or service increases in value and gets closer to the needs of the end customers. In a manufacturing environment, this can be seen in how the raw materials flow through the factory, for example on conveyors, and ends as the finished product. In an office environment, this may be how a series of documents and information flow through the office to result in a completed report. Each time the flow is interrupted there is likely to be a delay: this results in the waste of waiting.

What is it linked to?

The waste of waiting is often linked to poor physical space layouts and poor resource planning and monitoring. In order to counteract waiting waste, inventory is often used to make sure that activity continues to take place: we have already examined inventory waste and its implications. The ability to make the value adding steps flow smoothly through a process can dramatically reduce the amount of waiting time. Removing obstacles to this flow is therefore critical, and these obstacles are often machine or people bottlenecks which cannot work at the speed of the rest of the process.

What does it look like?

How do you spot it?

The physical signs of the waste of waiting are people, materials or machines standing idle. The presence of large amounts of inventory also suggests that the flow is not correct and that without it there would be waiting waste.

Overproduction waste

What is it?

The waste associated with making more than the customer needs, making it too early or making it 'just-in-case'. Often overproducing is actually encouraged and rewarded and built into the payment mechanisms. In construction, for example, payment to plasterers is often calculated on the area covered by plasterboard, thus encouraging him to cover large areas. This is in contrast to what is needed by the painter: a small area completely finished to allow her to start painting.

Overproduction can lead to an increase in the cost of repairing defects, either because more products were produced incorrectly or as a result of damage caused by the need to store them. Overproduction can also mean that items need to be thrown away: consider the amount of food that is thrown away by large supermarkets after it remains unpurchased by the shopper.

What is it linked to?

Overproduction waste is often the normal situation encouraged by the payments of bonuses based on output, not what is needed by the customer. Overproduction is obviously linked with inventory waste which then needs to be moved around: transport and motion waste. The just-in-time system not only tackles the inventory of material deliveries, it also eliminates the overproduction of items required in the next steps of a process.

What does it look like?

How do you spot it?

Overproduction is spotted in a similar way to inventory waste. Large stockpiles of finished goods are a sign of overproduction, together with large quantities of part-finished works, or goods where one step in the process is overproducing for the subsequent steps.

Over-process waste

What is it?

The waste associated with overcomplicating processes or actions: 'using a sledgehammer to crack a nut'. This is often seen in overly complicated machines in a manufacturing environment, or complex software packages in the service sector.

This waste is at odds with modern management thinking, in its belief that the latest technology will solve company problems. The introduction of sophisticated materials handling systems, the use of personal digital assistants (PDAs) to collect data and the use of specialist IT can all appear as the solution to many problems. Care is needed that these 'solutions' are not simply hiding more root cause problems and actually introducing over-process waste.

What is it linked to?

Over-process waste often results from poor flow and the wastes of inventory, overproduction, motion, transport and waiting. The flow of value adding steps is often interrupted by over-process waste. Generally, complex machines are expensive and need to be run extensively to ensure the organisation gets value for money. This can lead to overproduction and the other associated wastes when they are not used to meet demand.

In the information and service environments, processes are often overcomplicated due to the power of IT. Computer packages and software tend to be developed and introduced to an organisation over time. This can lead to duplication of entries, eg inputting addresses many times and using computer packages ineffectively.

What does it look like?
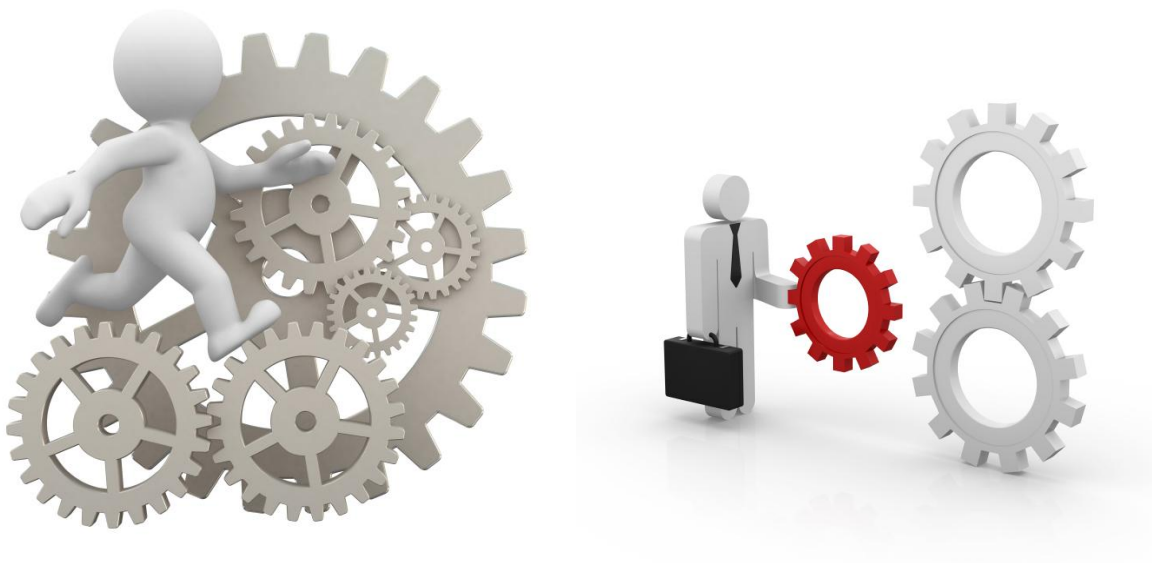
How do you spot it?

Over-process waste is one of the most difficult wastes to spot. Observation of the environment and talking to those involved is the best way of identifying this waste.

Defect waste

What is it?

The waste associated with having to correct something. This is probably the most common and most easily identifiable waste of all. The waste of defects does not only mean having to correct the finished product, but includes all of the times that operations have to be repeated to fix in-process defects.

Western and Japanese car manufacturing organisations historically have shown significant differences in their approach to defects. Western manufacturers typically had many quality managers tasked with checking the end products and ensuring that any defects were fixed before they were sent to the customers. Japanese organisations, in contrast, focused on identifying where the defect occurred and changing the operation so that it did not happen again, eliminating the defect for good.

Continuous improvement techniques use this second approach to identify and solve the root causes of defects to make sure that they are eliminated. Quality assurance is used to protect the customer from bad quality, but is not used as a substitute for eliminating the reason for the bad quality in the first place.

What is it linked to?

Defect waste is linked to all of the other wastes and is usually an indicator that there are other wastes in the system. Detecting defects is also critical to avoid incurring further waste and cost. If the defect is identified and sorted quickly, the cost is generally small. If it is left, and it ultimately reaches the client, the costs needed to sort the problem can be significant. The loss of goodwill from the customer may also be significant and result in the loss of business.

What does it look like?

How do you spot it?

Defects are generally easy to spot and organisations often have specific quality assurance and control procedures in place to prevent the defects from reaching the end customers.

Activity 3

1. Using the table below identify examples of each of the eight wastes in your organisation or role.

Waste	*Example*
Transport	
Inventory	
Motion	
Poor utilisation of knowledge	
Waiting	
Overproduction	
Over-process	
Defects	

2. What do you think is the biggest waste in your part of your organisation?

Planning and carrying out a Kaizen activity

This qualification requires you to plan and carry out a Kaizen activity and show business improvement using key performance indicators (KPIs). This section of the learning pack will take you through the various stages of a Kaizen activity and provide guidance on how you may wish to structure your project.

A business case

A business case sets out the main objectives of the Kaizen activity, who will be involved, the timescales, and what the costs and anticipated benefits are. It may also include the approach to be used for the Kaizen project and identify any risks associated with it. A business case can be summarised in a document that can be used to identify the need for the Kaizen activity. It can also be reviewed at the end of the project to compare the planned with the actual benefits, undertaking a PDCA cycle within the project itself.

The use of business cases within an organisation is a useful way of evaluating a number of ideas. It allows them to be easily prioritised to identify those which provide the largest benefits and those which are to be undertaken. An organisation carrying out lots of continuous improvement projects needs to prioritise new ideas to make sure that they are worthwhile. A submitted business case may be reviewed simply on its merit or compared with other competing business cases to work out which one should have priority. Sometimes this comparison is done using a Boston Matrix.

Project business case

Project name	Smarter Printing	
Project manager	A B Cartwright	
Project team members	**Name**	**Role and responsibility**
	Dee Elvin	Data collection and analysis
	Fiona Garty	Surveys and admin support
Project description	A project to investigate opportunities for smarter printing. This will include looking at colour vs black and white printing, printer locations and paper use.	
Project goals	Reduce the costs of the admin department through reduced use of toners and other consumables. Reduce time wasted in printing, walking and collecting paper from printers.	
Project activities	**Plan**	Locate all printers and mark on a layout of the office. Carry out survey of which printers people use. Carry out survey of historic printer costs over the past 18 months.
	Do	Review surveys and layouts to spot improvements and areas of waste. Identify and fix the root causes.
	Check	Carry out second set of surveys to compare against those done in the planning stage of the project to see if there are any improvements.
	Act	Write a short report on the findings and ideas that have been produced. This report will be used either to continue to improve the printer use within the admin department and prompt another round of improvements. The report may also be used to carry out similar exercises in other parts of the business.
Project timescale plan	Planning and surveys — March to early June Analysis of the findings — June to July Carry out improvements — July and August Resurvey — September and October Final Report — end of October	
Resources required	Access to finance records for printer consumable costs. Possible assistance if some of the large printers need moving.	
Cost benefits	Target of 10% saving on printer consumables.	
Quality benefits	None identified.	
Delivery benefits	Less time spent printing and collecting — to be checked from surveys.	
Other benefits	Less paper use has an environmental benefit.	
Project approved by	M D Procter.	

Boston Matrix

A Boston Matrix is a simple way of comparing and evaluating a number of ideas. There are a number of variations, but to evaluate ideas one of the simplest forms is shown below.
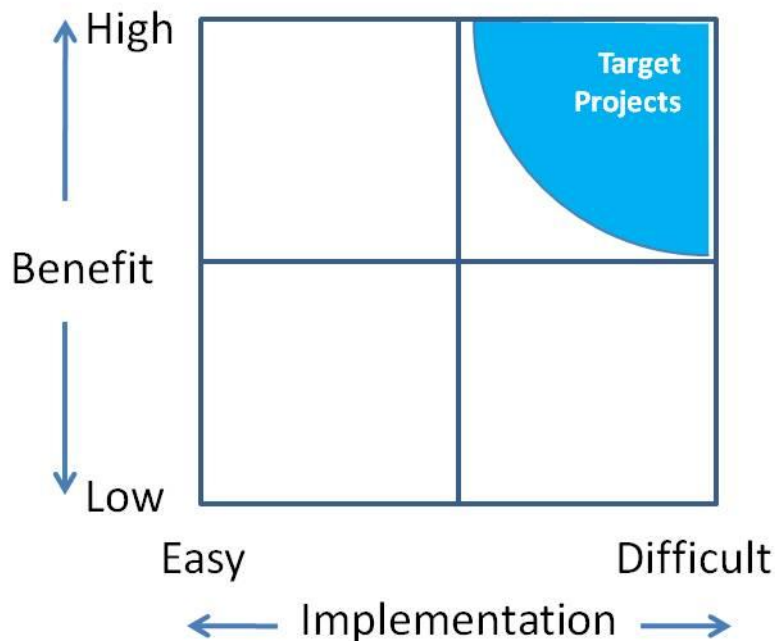
Potential ideas or projects are placed in the matrix against whether they are easy to do and what impact their success would have on the business. In this example those in the top right-hand corner, projects 1, 2 and 5, are easy to do and have a high impact. Therefore, these would be the ones that would be prioritised and progressed dependant on available resources.

A structured waste elimination activity

There are a number of approaches to waste elimination and problem solving, and your trainer will discuss these with you. All try to tackle a problem in a structured way to ensure that it takes place in the most efficient way. A typical problem solving activity would contain the following elements:

- Define the problem — clearly identify the nature of the problem and try to describe it as accurately as possible.
- Data collection — carry out surveys, observations, tick sheets and collect historic records.
- Data analysis — analyse the data and identify the opportunities for improvement.
- Improvements — carry out improvement activities based on the data.
- Sustain the improvements — make sure that the improvements stick by changing procedures and monitoring the improvement.

The exact nature of the waste elimination activities will vary depending on the type of project and the work environment. In all cases the aim of the waste elimination activity is to use problem solving tools and techniques to get to the root cause of the problem and eliminate it. You will need to discuss with your trainer your approach to waste elimination before you start your project to make sure that you get to the root cause.

Problem solving tools and techniques

You are likely to use a number of problem solving tools and techniques when carrying out your Kaizen activities. These tools and techniques are too numerous to describe in detail here, but your trainer will discuss those that are relevant to you. The list below gives a brief overview of the most common tools and techniques and where they might be used in a Kaizen activity.

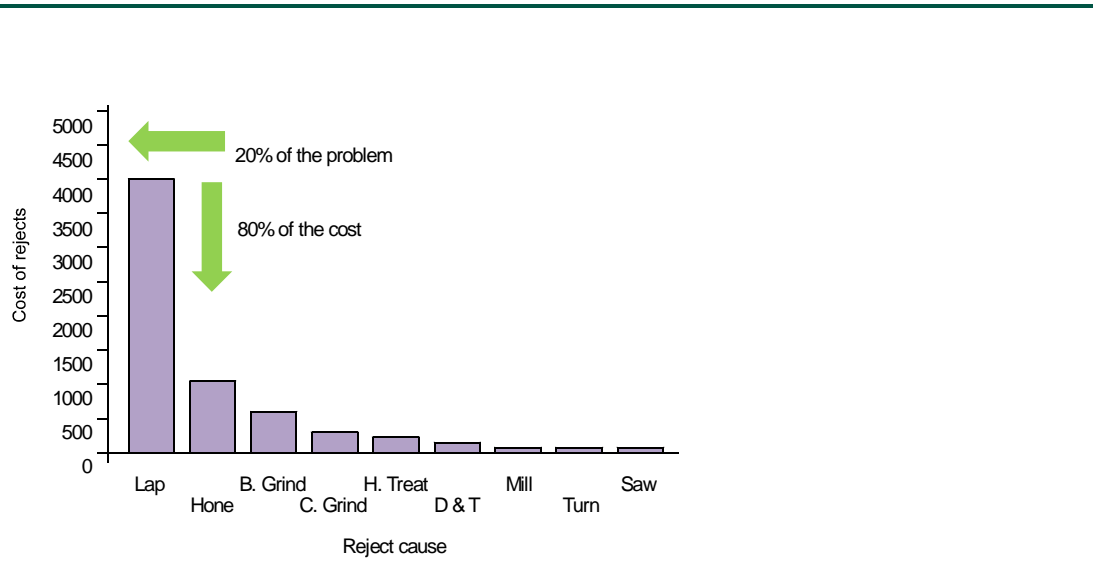| Tool	Image	Description
Brainstorming		A team-based approach to generating ideas. There are structured and un-structured ways of using this tool but both try to encourage open-mindedness and building on others' ideas. This is generally used to generate ideas as potential solutions to problems.

Cause and effect (Fishbone) diagram		A way of identifying and graphically displaying the effects that different elements have in causing a problem or situation. This is used to identify the most likely causes of problems for further investigation or resolution.
Check sheets		A data collection tool to capture information such as the number of defects, reasons for failure, etc. They typically use a simple system for recording data and allocating it into categories. This tool is most often used to identify the location and size of a problem.

Control charts		This is a more complex tool used to examine variation in a process. It is most widely used to investigate changes in machine or process performance.
Flowcharts		A diagrammatic tool to identify a sequence of events. It can be used either to examine a current process or to standardise an improved process. Flowcharts generally use standard symbols and are widely used to make sure that improvements are maintained.
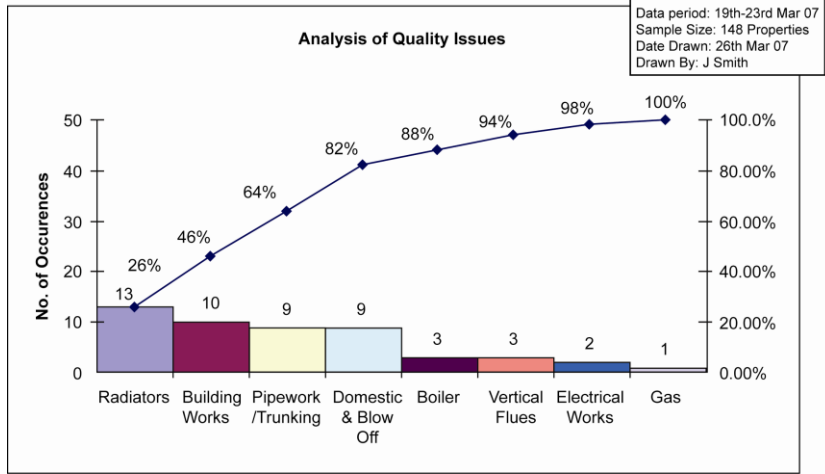
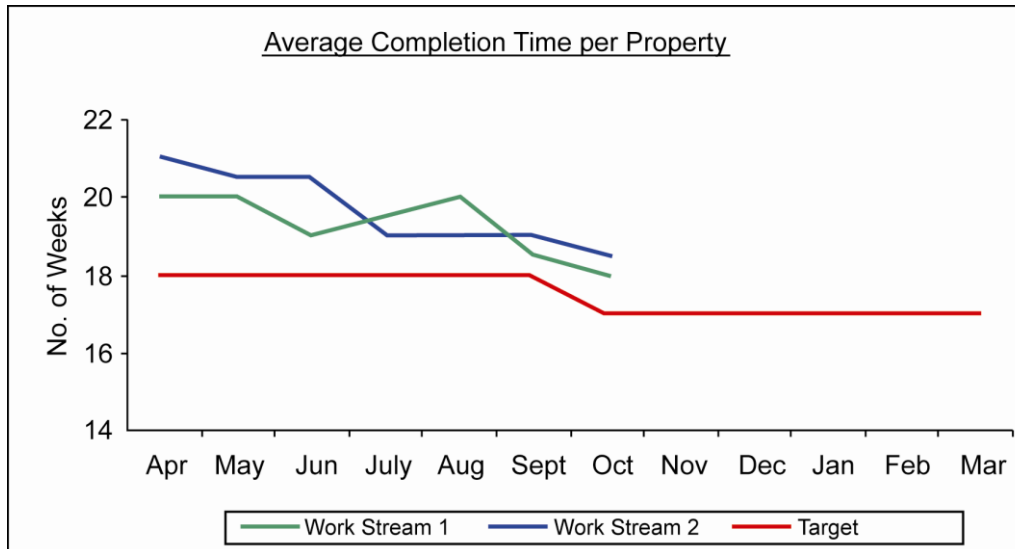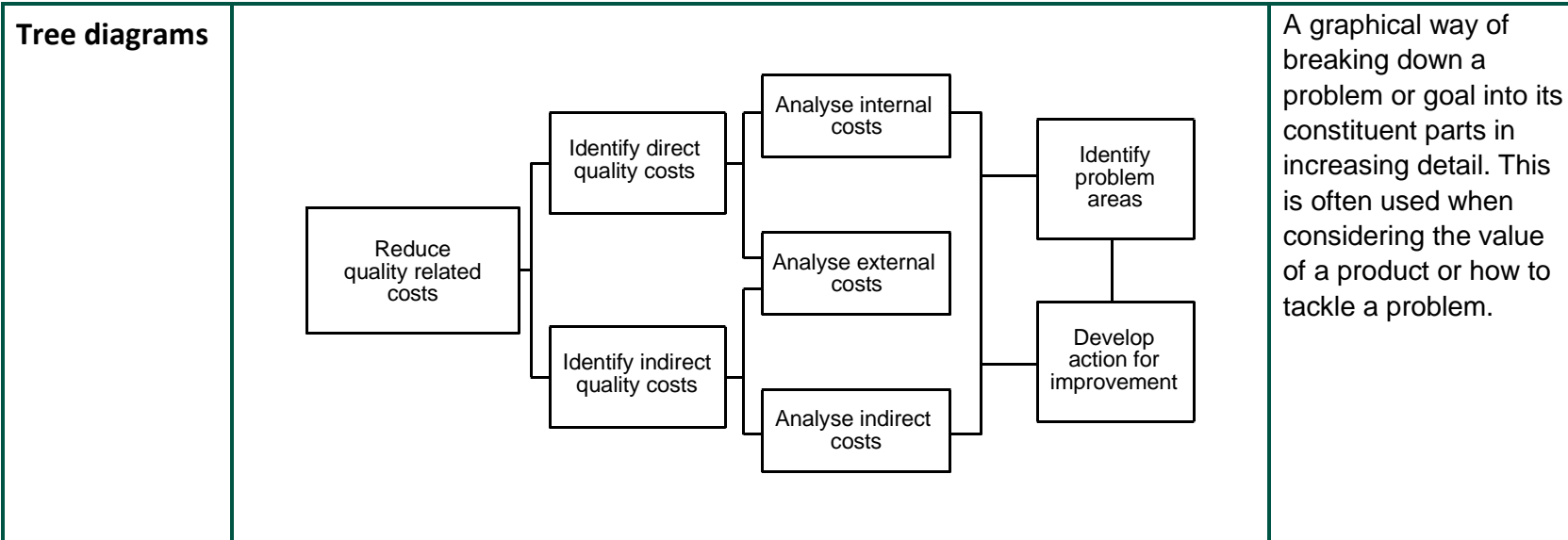|		
Histogram		A graphical representation of data in the form of a bar chart. There are a number of variations but all help to analyse large amounts of data. They are used both as a way of identifying improvement areas and as a way of checking that improvement has taken place.
Pareto chart		A specific form of histogram that focuses on the problems that have the biggest impact. These are graphical representations of data and use the Pareto Principle that 80% of problems are generally caused by 20% of sources.
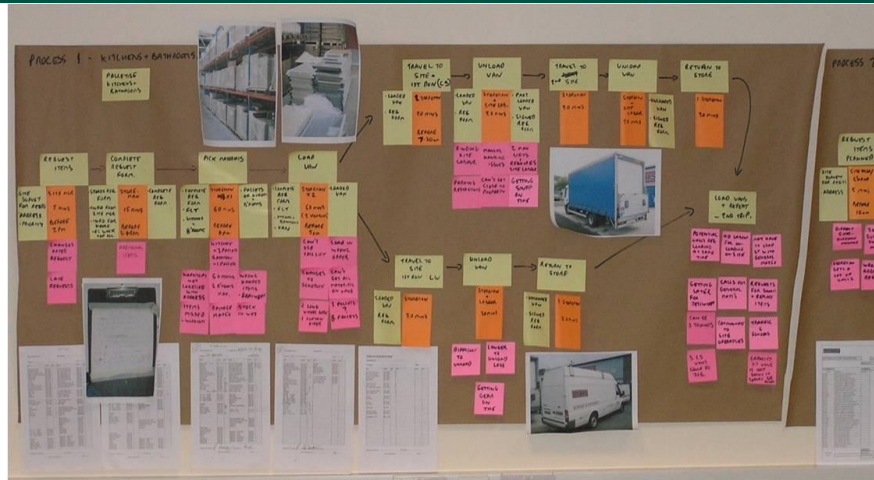
Process mapping		A variation on flow charts that produces a graphical representation of a process. There are a number of variations depending on the purpose of the process map.
Run charts		A graph recording the performance over time to identify patterns or trends. These can be used as a diagnostic tool to identify problems or to simply monitor performance.

| Tree diagrams | | A graphical way of breaking down a problem or goal into its constituent parts in increasing detail. This is often used when considering the value of a product or how to tackle a problem. |

Root causes and the 'five whys'

Kaizen activities attempt to eliminate waste permanently by getting to the root causes of the problems. This is important to avoid the problems reappearing elsewhere, rather like the 'Whack a Mole' game that is often seen at fairgrounds. The five whys technique simply asks 'why?' repeatedly and is known as the five whys because Toyota, its inventors, believed that the question needed to be repeated five times before getting to the root cause.

The number of repetitions is not critical but the technique simply tries to challenge and not accept the first answer given. It tries to get to the underlying causes of a problem rather than solving the symptoms.

An example of this might be as follows:

There is a large number of decorating colour mismatches on a construction site.

Why?

It is difficult to see in the rooms because there is no power on and the light levels are not sufficient to spot the differences.

Why?

The light levels are low because the decorators are not using the correct lamps to light up the rooms.

Why?

The decorators do not want to use the correct portable lamps because they keep getting stolen.

Why?

The site is not secure and there is nowhere to store their portable lamps.

Possible solutions

1. Provide a secure and lockable container so that the decorators can store their lights.
2. Make sure that the power and permanent lighting is on before doing any final painting.

This example shows that the root cause of a problem is not always the most obvious.

Measurement

Measurement forms the foundation for all improvement activities. It is important to understand whether a Kaizen activity is producing beneficial results. Measurement techniques are used to show performance and can be used to identify potential problem areas and to demonstrate improvement. Measurement drives human behaviour: it is therefore very important to get the right measures in place to drive the right behaviours. Often these measures are linked to bonus payments. Extra care is needed to make sure that, where this happens, the measurement is not driving an inappropriate behaviour.

As an example, if a person doing telesales is being paid on the basis of the number of phone calls made in a day, she is likely to make a large number of phone calls. This will not necessarily lead to a large number of sales: the person may not spend much time explaining the product or listening to the customer. A person being paid by the number of sales made may make far fewer calls but will provide a greater overall benefit to the company if they are able to sell more products.

QCD measures

There are many measures of performance but the majority are based on five key areas: quality, cost, delivery, satisfaction, and health and safety. The first three areas are often referred to as QCD measures and are most commonly used. Examples of each of these measures are shown below.

Quality	Number of defective parts, time taken to rectify problems, percentage of parts outside of specification tolerance
Cost	Cost of production, efficiency of production, cost per unit, cost of overtime paid
Delivery	Percentage delivered on-time, response time, production throughput, delivery time
Satisfaction	Staff morale, staff attendance, customer survey feedback, number of suggestions
Health and safety	Number of accidents, near misses, number of accident free days, number of health and safety suggestions

These measurement areas can be applied to any business or sector. In a restaurant, customers want good quality food, at the right price, served quickly by friendly staff and cooked well to avoid health issues. Equally we could consider a factory or construction site and identify the equivalent measures in these environments.

Key performance indicators

Key performance indicators are particular types of measurement whose definition varies between industry sectors and organisations. They are generally acknowledged as the most critical measurements that influence production, and are often monitored on a daily or even hourly basis.

A number of governmental organisations have produced bespoke sets of KPIs for monitoring performance. These KPIs are also regularly used to compare organisations, an activity known as benchmarking. One of the most widely used set of measures is the Department of Trade and Industry (DTI) seven measures, which are shown below. Further information can be found in the DTI-published document *Achieving Best Practice in Your Business: Quality, cost, delivery: measuring business performance*.

1. Not Right First Time (NRFT) = defective units/total units
2. Delivery Schedule Achievement = number of planned deliveries – (number of late deliveries + number of part deliveries) / total number of deliveries

3. Productivity (P) = number of units made / number of operator hours taken
4. Stock Turn = annual sales turnover / current stock level
5. Overall Equipment Effectiveness (OEE) = availability x performance x quality
6. Value Added per Person = (sale price – cost) / number of staff to produce the item
7. Floor Space Utilisation = sales turnover / area of workspace used

These measures are predominantly used in the manufacturing environment, but variations are used in other sectors including service.

Activity 4

1. What measures for quality, cost and delivery are used in your workplace?

2. Are there any key performance indicators that your industry uses and where might you find information relating to them?

Visually displaying measurement

In order to get the most benefit from measurement, it is important to consider how the information will be displayed. Many organisations produce measurement or 'war' boards to keep everyone informed. These measurement boards will use a variety of techniques to display the information. Two of the most common are time-line graphing and RAG charts.

Time-line graphs

These track performance over time and are simple charts using points, lines or bars. The graphs may show targets for performance and also trends. An example time-line graph for the number of defects produced by a production line is shown below.

RAG charts

Red, amber, green (RAG) charts display performance, usually for a number of measurements, using a traffic light system. They usually track performance over time, with the colours indicating what further action is required. Where a measure turns red, it is below the expected performance criteria and further investigation is required to improve the situation. An amber measure indicates that this element should be monitored more closely to make sure that it does not turn red. Green indicates that the measure is satisfactory. The colours on the chart give the viewer a very rapid overview of a number of indicators and allow the person to focus on those areas needing more attention.

A SERVICER LTD

MONTHLY MONITOR - SERVICING					Month Days	April-07 21	May-07 21	Jun-07 21	Jul-07 22	Aug-07 22
					Invoice cost	£ 7,000.00	£ 7,500.00	£ 6,600.00	£ 4,500.00	£ 5,200.00
MEASURE	RED	AMBER	GREEN		M'ment cost	£ 1,000.00	£ 800.00	£ 600.00	£ 500.00	£ 800.00
TOTAL NUMBER OF JOBS INVOICED THIS MONTH	45	Between	85			120	110	115	98	103
TOTAL NUMBER OF DELAYED JOBS AT THE END OF THIS MONTH	30	Between	10			15	10	8	7	5
TOTAL NUMBER OF JOBS NOT POSSIBLE DUE TO UNKNOWN CAUSES OUTSIDE OF COMPANY CONTROL	3	Between	1			2	1	2	1	1
%AGE OF NUMBER OF JOBS COMPLETED AT 1ST ATTEMPT THIS MONTH (COLD CALL AND APP1) AGAINST COMPLETED JOBS	50%	Between	75%			45%	56%	47%	58%	78%
AVERAGE NUMBER OF JOBS / DAY	3.5	between	4.5			5.7	5.2	5.5	4.5	4.7
AVERAGE COST PER JOB INCLUDING MANAGEMENT COST	£ 60.00	£ 50.00	Between			£ 58.33	£ 68.18	£ 57.39	£ 45.92	£ 50.49
AVERAGE COST PER JOB EXCLUDING MANAGEMENT COST	£ 45.00	£ 35.00	Between			£ 50.00	£ 60.91	£ 52.17	£ 40.82	£ 42.72

In the example above it is very easy to identify those areas that require improvement activities.

Process cycle times

The cycle time of a process is also a measure that is often used and displayed. The cycle time can be viewed as the time taken to undertake a specific activity within a process or indeed the overall process time. Processes move at the speed of the slowest operation and therefore it is important to balance the operations to achieve a steady flow of work. Ideally the speed of these operations will be linked to the rate that the customer demands the product or service. This balancing of supply to demand ensures the optimum use of resources.

The balancing of work to demand can be graphically displayed in a variety of ways, but one of the easiest is shown below. In the first example we can see that operation B takes longer than the available time to deliver to the customer. We can also see that operation D has available capacity.
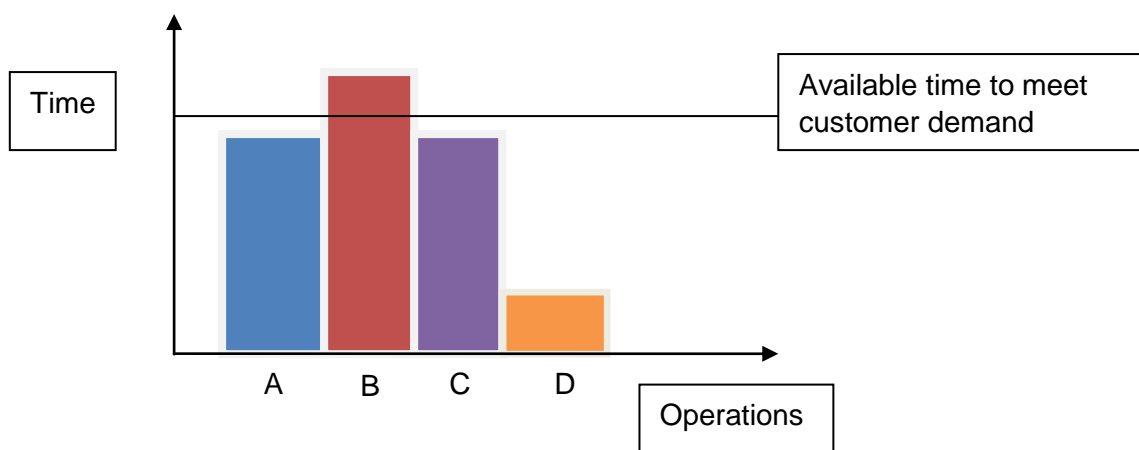
By balancing some of the work content, moving some of the activity from operation B to operation D, we can obtain a more balanced line and therefore achieve better flow.
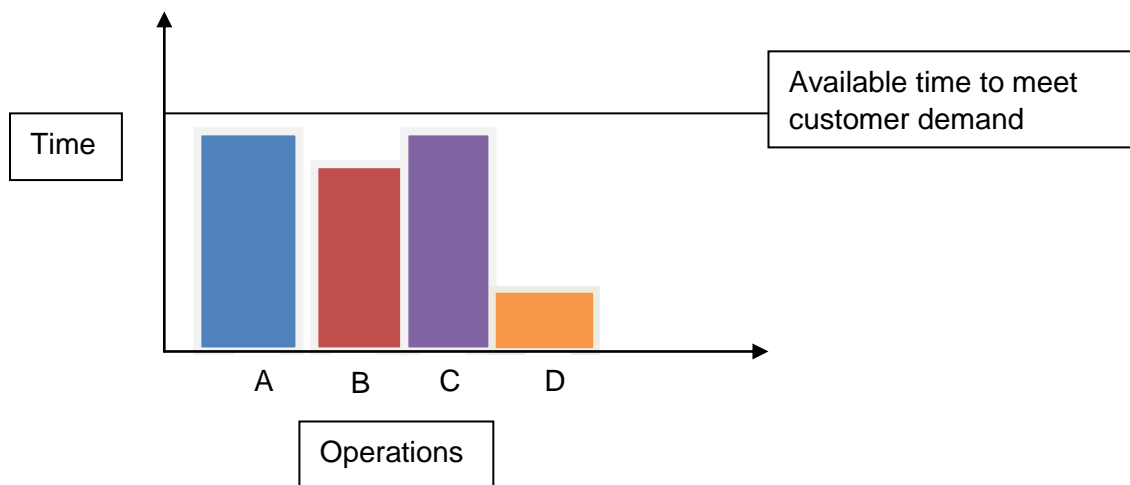
There are a number of different techniques required to achieve the balancing act shown above, and these are not covered specifically in this NPA. If you wish to undertake a project of this nature you should discuss it with your trainer.

Standard operating procedures

The standardisation of work is recognised as one of the key components of many organisations in ensuring constancy and quality. Standardisation is a way of ensuring that the current best method of working is being carried out across the organisation. Henry Ford expressed this as follows

'To standardise a method is to choose out of many methods the best one, and use it. What is the best way to do a thing? It is the sum of all the good ways we have discovered up to the present. It therefore becomes the standard. Today's standardisation is the necessary foundation on which tomorrow's improvement will be based.'

The standardisation of activities or processes is recorded in standard operating procedures (SOPs). These are often incorporated into a quality management system but can be simple check sheets or lists of activities to ensure that the best way of doing something is carried out.

One SOP that most people will be familiar with is the car MOT test procedure. Check sheets remind the inspector of the procedures and tests that must be followed. These check sheets are often given to the owner of the vehicle as evidence that the checks have been carried out and that the vehicle is safe to drive. The check sheets are supplemented by a manual explaining each how each check is carried out in more detail. This manual provides guidance on how to perform each test and the criteria by which the vehicle may pass or fail.

SOPs are used in a wide variety of instances including: cleaning of equipment, maintenance of equipment, health and safety practices, process procedures, manufacturing operations and quality controls. As part of this qualification you will be required to make recommendations for the creation of new SOPs or make changes to existing ones to ensure that the improvements you make are maintained.

Further guidance on SOPs is contained in the final Unit of this learning pack, and you can discuss specific examples with your trainer.

Sustaining the improvements

Sustaining improvements is one of the most challenging aspects of continuous improvement. There is a great deal of evidence to show that a great many improvements slip back over time because there was no plan put in place to stop this from happening.

Continuous improvement can be thought of as pushing a giant ball up a hill. It is hard work and if you stop pushing, the ball will simply roll back down. The only way to prevent this is to put a wedge in to hold the ball in place. There are a number of ways of putting improvement wedges in, and we have already seen how SOPs can be used to standardise the new way of working. These SOPs need to be monitored and policed to make sure that everyone is working to the best method and that additional improvements are captured.
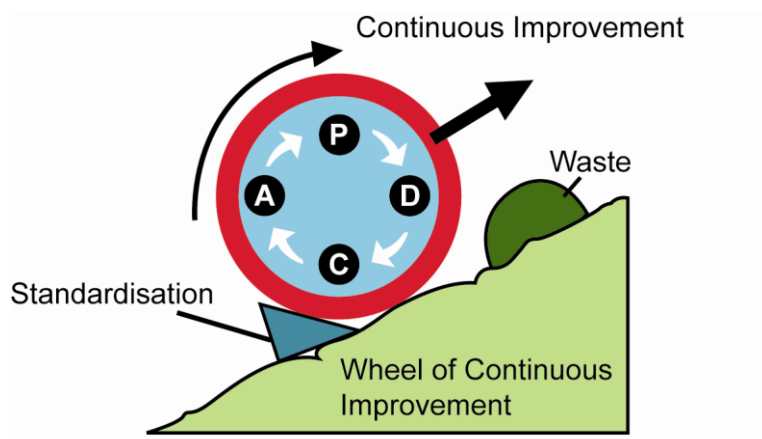
It is the responsibility of management to make sure that improvements are maintained and that procedures are followed. This needs to be carried out at all levels of management, from the MD to the workforce, with each having responsibilities for ensuring that parts of the improvement culture are maintained. This philosophy may need to be extended to the wider supply chain, and naturally this increases the level of difficulty in sustaining the improvements. It is worth noting that external organisations may need to sustain their improvements to maintain your own.

Motivation is key to maintaining improvements: people must want to improve and use the tools and techniques applied. Achieving this can be difficult if there is a high staff turnover or where there are concerns about job security. Additional training may be required to spread learning and understanding across the organisation. This training may be linked with rolling out a pilot project, or may involve a process of 'train the trainer' where one person is trained in a particular tool or method and then goes on to train others in the same tool or method. This technique ensures that learning is really understood. People receiving the subsequent training often find it easier to understand when it is coming from someone internally in the business rather than external consultants.

Ultimately, sustaining improvements needs to become part of the organisational culture if it is to become a leader in its field. The best performing businesses complete the PDCA cycle constantly. Workers view continuous improvement as part of the day job and not as an add-on. These organisations have been seen to significantly outperform their competitors in terms of quality, cost, delivery and profit levels, and have a more satisfied workforce.

Self-check questionnaire

Use this self-check questionnaire to make sure that you now know about continuous improvement.

When you have finished, discuss your answers with your trainer.

1. What are the differences between continuous improvement (Kaizen) and other types of improvement?

2. How would you tell if an organisation is using continuous improvement in its business?

3. What is the PDCA cycle?

4. What is the definition of value adding work?

5. What are the eight wastes?

6. What are the benefits of a business case?

7. What is the purpose of the five whys technique?

8. What QCD measures would you consider most appropriate for (choose one from the list)

    a) a call centre handling customer complaints?
    b) a factory making car doors?
    c) a construction site building a new school?

9. How would you use a RAG chart to identify problem areas?

10. What are the reasons for using standard operating procedures?

Acknowledgements