

Higher National Unit Specification

General information for centres

Unit title: Quality Improvement

Unit code: DW6K 34

Unit purpose: This Unit is intended to enable the candidate to contribute effectively to the continuous improvement of the quality of products, services and processes offered by an organisation. The Unit should introduce candidates to simple and advanced improvement techniques, also company wide techniques.

On completion of the Unit the candidate should be able to:

- 1 Describe the process of Continuous Improvement in relation to the quality of products and/or services and processes of an organisation.
- 2 Select and apply simple quality improvement tools and techniques for varying situations.
- 3 Select and apply advanced quality improvement tools and techniques for varying situations.
- 4 Evaluate the effectiveness of Company-wide improvement techniques within an organisation.

Credit points and level: 1 HN Credit at SCQF level 7: (8 SCQF credit points at SCQF level 7*).

**SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

Recommended prior knowledge and skills: It is recommended that candidates undertaking this Unit possess good written and/or verbal communication skills, together with a knowledge of the fundamentals of quality and quality management. This may be evidenced with the possession of the HN Unit Fundamentals of Quality (DV9T 34) or an equivalent unit covering these knowledge and skills areas.

Core Skills: There are opportunities to develop the Core Skills of Communication at SCQF level 6, Problem Solving at SCQF level 6, Numeracy at SCQF level 5, Working with Others at SCQF level 6 and Information Technology at SCQF level 5 in this Unit, although there is no automatic certification of Core Skills or Core Skills components.

Context for delivery: If this Unit is delivered as part of a Group Award, it is recommended that it should be taught and assessed within the subject area of the Group Award to which it contributes.

Assessment: The assessment can take form of both closed-book and open-book assessments with structured questions and practical exercises.

General information for centres (cont)

A holistic approach may be taken to the assessment of all or a selection of the four Outcomes. A single instrument of assessment based on a case study of a real or fictitious organisation can be used. Candidates should be provided with, or directed to, information relating to the organisation and its environment. If the candidate is directed to gather information, the case study should ideally be based on an organisation that the candidate is familiar with, or one about which the candidate can easily gather data. Candidates who have current or past work experience may be able to base their assignment on an organisation in which they have previously worked.

Outcomes may also be assessed individually.

Higher National Unit specification: statement of standards

Unit title: Quality Improvement

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The sections of the Unit stating the Outcomes, knowledge and/or skills, and evidence requirements are mandatory.

Where evidence for Outcomes is assessed on a sample basis, the whole of the content listed in the knowledge and/or skills section must be taught and available for assessment. Candidates should not know in advance the items on which they will be assessed and different items should be sampled on each assessment occasion.

Outcome 1

Describe the process of Continuous Improvement in relation to the quality of products and/or services and processes of an organisation

Knowledge and/or skills

- ◆ Concept of Continuous Improvement
- ◆ Continuous Improvement within an organisation
- ◆ Tools and techniques for Continuous Improvement

Evidence Requirements

Candidates will need to provide evidence to demonstrate their knowledge and/or skills by showing that they can:

- ◆ Describe the concept of Continuous Improvement in relation to achievement of quality enhancement standards within an organisation.
- ◆ Describe the importance of applying the Continuous Improvement concept in relation to the quality of a product, OR service, OR process.
- ◆ Explain the selection criteria for continuous improvement tools and techniques, in relation to two different categories

Assessment guidelines

This Outcome could be assessed by a series of structured questions under closed-book conditions.

OR

This Outcome can be assessed as part of an integrated assessment of all, or a selection of, the four Outcomes.

Higher National Unit specification: statement of standards (cont)

Unit title: Quality Improvement

Outcome 2

Select and apply simple quality improvement tools and techniques for varying situations

Knowledge and/or skills

- ◆ Selection criteria for the simple quality improvement tools and techniques.
- ◆ Application of simple quality improvement tools and techniques.

Evidence Requirements

Candidates will need to provide evidence to demonstrate their knowledge and/or skills by showing that they can:

- ◆ Select appropriate simple quality improvement tools and techniques for varying situations within an organisation. This must include a minimum of four from Pareto Analysis; Cause and Effect diagrams; Histograms; Bar Charts; Scatter diagrams; Data Collection methods.
- ◆ Brainstorming.
- ◆ Apply a selection of simple quality improvement tools and techniques to practical situations. This must include a minimum of four from Pareto Analysis; Cause and Effect diagrams; Histograms; Bar Charts; Scatter diagrams; Data Collection methods.

Assessment guidelines

Candidates could be presented with a quality related problem/problems, real or fictitious, and required to use a selection of tools to resolve the problem.

This Outcome could be assessed by a series of practical exercises under open-book conditions.

OR

This Outcome can be assessed as part of an integrated assessment of all or selection of the four Outcomes.

Outcome 3

Select and apply advanced quality improvement tools and techniques for varying situations

Knowledge and/or skills

- ◆ Selection criteria for advanced quality improvement tools and techniques
- ◆ Application of advanced quality improvement tools and techniques

Higher National Unit specification: statement of standards (cont)

Unit title: Quality Improvement

Evidence Requirements

Candidates will need to provide evidence to demonstrate their knowledge and/or skills by showing that they can:

- ◆ Select appropriate advanced quality improvement tools and techniques for varying situations within an organisation. This must include a minimum of four from Affinity Diagrams; Logic Diagrams; Tree Diagrams; Arrow Diagrams; Quality Function Deployment; Taguchi Methods; Process Mapping; FMEA.
- ◆ Apply a selection of advanced quality improvement tools and techniques to practical situations. This must include minimum of four from Affinity Diagrams; Logic Diagrams; Tree Diagrams; Arrow Diagrams; Quality Function Deployment; Taguchi Methods; Process Mapping; FMEA.

Assessment guidelines

Candidates could be presented with a quality related problem/problems, real or fictitious, and required to use a selection of tools to resolve the problem.

This Outcome could be assessed by a series of practical exercises under open-book conditions.

OR

This Outcome can be assessed as part of an integrated assessment of all or selection of the four Outcomes.

Outcome 4

Evaluate the effectiveness of company wide improvement techniques within an organisation

Knowledge and/or skills

- ◆ Selection criteria and application of Company-wide improvement techniques
- ◆ Evaluation process of Company-wide improvement techniques

Evidence Requirements

Candidates will need to provide evidence to demonstrate their knowledge and/or skills by showing that they can:

- ◆ Evaluate the selection and application of Company-wide improvement techniques including:
 - benchmarking
 - statistical process control
 - six sigma
 - balanced scorecard
- ◆ Evaluate the effectiveness of Company-wide improvement techniques including:
 - benchmarking
 - statistical process control
 - six sigma
 - balanced scorecard

Higher National Unit specification: statement of standards (cont)

Unit title: Quality Improvement

The evidence must demonstrate that the candidate has a detailed knowledge of the selection, application and evaluation of Company-wide improvement techniques and is able to employ a critical approach within the discussion.

Assessment guidelines

This Outcome could be assessed by the submission of a report, approximately 750-1,000 words, under open-book conditions.

OR

This Outcome can be assessed as part of an integrated assessment of all, or selection of, the four Outcomes.

Administrative Information

Unit code:	DW6K 34
Unit title:	Quality Improvement
Superclass category:	VD
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Higher National Unit specification: support notes

Unit title: Quality Improvement

This part of the Unit specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours.

Guidance on the content and context for this Unit

This Unit is a mandatory unit for the group award HNC Quality and is designed to provide candidates with an understanding and practical experience of quality improvement tools and techniques.

The Unit highlights the concepts of continuous improvement within the context of an organisation, and selection criteria and practical application of the tools and techniques used. It also covers the concept of Company-wide improvement process and related techniques.

The Unit covers all aspects of quality improvement tools and techniques within an organisation, and is designed to:

- ◆ Enhance the candidate's knowledge of the process of Continuous Improvement in relation to the quality of products, services and processes of an organisation.
- ◆ Develop the candidate's skills in selecting and applying simple quality improvement tools and techniques for varying situations.
- ◆ Develop the candidate's skills in selecting and applying advanced quality improvement tools and techniques for varying situations.
- ◆ Enhance the candidate's knowledge of Company-wide improvement techniques within an organisation.

There are numerous different theories and models that can be used to demonstrate the content of this Unit, and to explain the role within organisations. The following gives some guidance on the content for each individual Outcome, it is neither exhaustive nor prescriptive:

Outcome 1

The concept of Continuous Improvement by definition with reference to the current versions of ISO 9000 Fundamentals and Vocabulary and ISO 8402: Glossary of terms used in Quality Assurance.

The concept of Continuous Improvement can be further enhanced by an understanding of related concepts of Measurement, Analysis and Improvement based on the content of clause 8 of the current version of ISO 9001 standard.

There are various theories on the concept of quality improvement within organisations, and this can be explored through any of these theories and philosophies of Deming, Crosby, Feigenbaum, Juran, Ishikawa and Taguchi to the new wave of Quality Gurus.

Higher National Unit specification: support notes (cont)

Unit title: Quality Improvement

Outcome 2

Simple Quality Improvement tools and techniques should be addressed by hands-on practical experience through case study or real-life situations. The candidate should be given an opportunity to develop practical skills as well as an understanding of the tools and techniques identified.

Data collection methods could include checklists, check sheets, flowcharts and flow diagrams.

Reference to the current version of BS 7850: Total Quality Management, *Guide to total quality management principles and improvement* would be beneficial.

The practical exercise could be based on a case study or simulation. The practical exercise should be a quality related problem that the candidates are required to resolve, thus contributing to developing opportunities for developing the Core Skill of Problem Solving.

Candidates may work in groups, eg for brainstorming and cause and affect analysis techniques thus contributing to developing opportunities for developing the Core Skills of Communication and Working with Others.

If techniques such as histograms, bar charts and check sheets are offered, candidates may develop opportunities for developing the Core Skill of Numeracy.

Outcome 3

Advanced Quality Improvement tools and techniques should be addressed by hands-on practical experience through case study or real-life situations. The candidate should be given an opportunity to develop practical skills as well as an understanding of the tools and techniques identified.

Reference to the current version of BS 7850: Total Quality Management, *Guide to total quality management principles and improvement* would be beneficial.

The practical exercise could be based on a case study or simulation. The practical exercise should be a quality related problem that the candidates are required to resolve, thus contributing to developing opportunities for developing the Core Skill of Problem Solving.

Candidates may work in groups, eg for brainstorming and cause and affect analysis techniques thus contributing to developing opportunities for developing the Core Skills of Communication and Working with Others.

If techniques such as histograms, bar charts and check sheets are offered, candidates may develop opportunities for developing the Core Skill of Numeracy.

Outcome 4

The concept of Company-wide Improvement Process and related techniques by definition with reference to the current versions of ISO 9000 Fundamentals and Vocabulary and ISO 8402: *Glossary of terms used in Quality Assurance*, and BS 7850: Total Quality Management, *Guide to total quality management principles and improvement* would be beneficial.

Higher National Unit specification: support notes (cont)

Unit title: Quality Improvement

The concept of Company-wide Improvement Process can be further enhanced by an understanding of the management principles, identified within the content of the current version of ISO 9001 standard.

There are various theories on the concept of Company-wide Improvement Process, and this can be explored through any of these theories and philosophies of Deming, Crosby, Feigenbaum, Juran, Ishikawa and Taguchi to the new wave of Quality Guru's.

Guidance on the delivery and assessment of this Unit

It is envisaged that this unit will be delivered through lecturer/learner discussion and reference to appropriate text, support material, experience and case study. Also the employment of appropriate guidance and coaching to develop the candidates practical skills in the application of tools and techniques. The appropriate use of examples and case study can help keep the Unit relevant to the candidates own organisation or which they are familiar with.

Candidates should be encouraged to relate theory and practice within their discussions and analysis. Candidates should also be encouraged to apply models and philosophies of quality related issues to real and/or fictitious organisations, and draw conclusions that relate to the concept of Continuous Improvement Process.

The Unit aims to integrate both theory and practice but the focus should be on the practical aspects of quality improvement tools and techniques employed within an organisation and their effectiveness.

Summative assessment should focus on the candidates understanding of the selection and application of quality improvement tools and techniques within the organisation. Candidates should be encouraged to practice applying the tools and techniques to varying situations relating to product, service and process. Formative assessment can be an ongoing part of the unit with candidates being given the assessment s/assignments to work on as each topic is taught.

Assessment for all outcomes can be based on a series of closed-book and open-book structured questions and practical exercises, covering the subject areas identified in the unit. Alternatively, assessments for all outcomes could be an integrated assignment based on a real or fictitious case study, and the candidate should be given suitable information and guidance to conduct the assignment.

Opportunities for developing Core Skills

The delivery and assessment of this Unit may contribute to all components of Core Skills Communication at SCQF level 6 because of the requirement to read various documents including textbooks and Standards, and to provide oral or written answers to formative and summative assessments.

The delivery and assessment of this Unit may contribute to all components of the Core Skill of Numeracy at SCQF level 5 because of the requirement to use and apply various statistical tools and techniques in all four Outcomes.

Higher National Unit specification: support notes (cont)

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The delivery and assessment of this Unit may contribute towards all components of the Core Skill of Problem Solving at SCQF level 6 because of the requirement to interpret a problem and to select appropriate tools and techniques to resolve the problem. This requires candidates to critically analyse the problem, select the appropriate tool or technique, plan and organise the use of this technique and then to evaluate the effectiveness of the tool or techniques in solving the problem.

The delivery and assessment of this Unit may contribute towards the Core Skill of Working with Others at SCQF level 6 because of the requirement to work with others in teams in order to apply some of the techniques, eg brainstorming, FMEA.

The delivery and assessment of this Unit may contribute towards the Core Skill of Information Technology at SCQF level 5 because of the nature of some of the tools and techniques required in Outcomes 3 and 4. Candidates will need to learn to use various Software packages, eg statistical process control packages, 6 sigma.

Open learning

This Unit is suitable for open or distance learning methods, and if it is decided to deliver the Unit through any of these methods, additional resources for candidate support, assessment and quality assurance will be required. For further information and advice please refer to the SQA guide: *Assessment and Quality Assurance for Open and Distance Learning (A1030, February 2001)*.

Candidates with additional support needs

This Unit specification is intended to ensure that there are no artificial barriers to learning or assessment. The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments or considering alternative Outcomes for Units. For information on these, please refer to the SQA document *Guidance on Alternative Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs*, which is available on the SQA website www.sqa.org.uk.

General information for candidates

Unit title: Quality Improvement

This Unit is a one credit mandatory Unit at SCQF level 7. It is recommended that you possess good written and/or verbal communication skills, together with a knowledge of the fundamentals of quality and quality management. This may be evidenced with the possession of the HN unit Fundamentals of Quality (DV9T 34) or an equivalent unit covering these knowledge and skills areas.

The Unit covers all aspects of quality improvement tools and techniques within an organisation, and is designed to:

- ◆ Enhance your knowledge of the process of Continuous Improvement in relation to the quality of products, services and processes.
- ◆ Develop your skills in selecting and applying simple quality improvement tools and techniques for varying situations.
- ◆ Develop your skills in selecting and applying advanced quality improvement tools and techniques for varying situations.
- ◆ Enhance your knowledge of Company-wide improvement techniques.

The Unit has four Outcomes. The first Outcome analyses the process of Continuous Improvement in relation to the quality of products, services and processes of an organisation. The second Outcome addresses the selection and application of simple quality improvement tools and techniques for varying situations. The third Outcome addresses the selection and application of advanced quality improvement tools and techniques for varying situations and the fourth Outcome explores the concept of Company-wide improvement techniques within an organisation.

The content of the Unit will be kept relevant through the appropriate use of examples and by focusing the areas of study on organisations that are relevant to you. This should provide the flexibility required to study, as appropriate, organisations of different sizes, public and private organisations, and organisations operating in different markets.

For successful completion of this Unit, you will be required to achieve a satisfactory level of performance on the assessment work. This will require you to assess and evaluate the concept of Continuous Improvement within an organisation and apply various tools and techniques to varying situations.