Highfield Level 3 End-Point Assessment for ST0193 Improvement Technician

End-Point Assessment Kit

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EPA Kit

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How to use this EPA kit

Welcome to the Highfield End-Point Assessment Kit for the Improvement Technician Apprenticeship Standard.

Highfield is an independent end-point assessment organisation that has been approved to offer and carry out the independent end-point assessments for the Level 3 Improvement Technician Apprenticeship Standard. Highfield internally quality assures all end-point assessments in accordance with its IQA process, and additionally all end-point assessments are externally quality assured by the relevant EQA organisation.

The EPA kit is designed to outline all you need to know about the end-point assessments for this standard and will also provide an overview of the on-programme delivery requirements. In addition**,** advice and guidance for trainers on how to prepare apprentices for the end-point assessment is included. The approaches suggested are not the only way in which an apprentice may be prepared for their assessments, but trainers may find them helpful as a starting point.

Key facts

Apprenticeship standard:	Improvement Technician
Level:	3
On Programme Duration:	Typically, 12-15 months
End-Point Assessment Window:	2 months
Grading:	Pass/merit/distinction
End-Point Assessment methods:	Multiple-choice examination Project report, presentation and questioning Professional discussion underpinned by log

In this kit, you will find:

- an overview of the standard and any on-programme requirements
- a section focused on delivery, where the standard and assessment criteria are presented in a suggested format that is suitable for delivery
- guidance on how to prepare the apprentice for gateway
- detailed information on which part of the standard is assessed by which assessment method
- suggestions on how to prepare the apprentice for each part of the end-point assessment
- a section focused on the end-point assessment method where the assessment criteria are presented in a format suitable for carrying out 'mock' assessments

Introduction

Standard overview

Improvement Technicians are responsible for delivery and coaching of improvement activity within an area of responsibility, often associated with Lean and Six Sigma methodologies. They can be found across all industry sectors and functions including automotive, banking, engineering, food products, IT, property, retail, telecoms, etc.

Typically, technicians work as a member of an operational team to resolve problems. They prevent re-occurrence, engaging others in issues affecting them and support the improvement of performance. Typical activities include:

- engaging team members in the identification of improvement opportunities and relevant countermeasures and controls
- initiating and facilitating improvement activities through to confirmed resolution
- providing local expertise in business improvement methods and basic tools to team

There are a variety of job titles associated with the occupation, these include, but are not limited to: Business Improvement Co-ordinator, Continuous Improvement Executive, Process Technician, Operational Excellence/Lean Engineer, Lean Six Sigma Yellow belt and Quality Control Analyst.

On-programme requirements

The period of learning, development and continuous assessment is managed by the employer, in most cases with the support of a training provider. The on-programme pace will be driven by individuals as well as by the breadth of experience an employer can offer. The whole programme will typically be completed in 12 - 15 months. The apprentice may start the end-point assessment at the earliest after 12 months on-programme.

In order to drive quality and consistency through on-programme learning employers may wish to consider the following:

- use of their normal performance management processes to monitor the progress of the apprentice, provide feedback and guide development
- provide support, ensuring the requirements of the apprenticeship standard are reflected in the above processes, and by filling any gaps through their work with apprentices

- carry out joint reviews of progress at regular intervals, involving apprentices, line managers and others with a direct relationship, e.g. mentors, workplace coaches, etc. They should agree how any issues are to be resolved together.

During the time on-programme, the apprentice:

- must have been involved with an improvement project which allows them to gather evidence of actions they have taken to go toward the completion of a project portfolio and report
- should develop and maintain examples of their work throughout their apprenticeship that cover the full standard. This should be in the form of a log, detailing all training, learning and workshops undertaken during the apprenticeship. The log must reference between 13 and 15 pieces of evidence. This should be presented at the gateway meeting.
- should have their on-programme work reviewed at intervals agreed by the employer and training provider, for example at 3, 6 and 9 months

Use of Artificial Intelligence (AI) in the EPA

Where AI has been used as part of the apprentice's day-to-day work and forms part of a project report, presentation, or artefact, it should be referenced as such within the work. AI must not be used to produce the report or portfolio.

Where AI has been used as part of a portfolio that underpins an interview or professional discussion or any other assessment method, it should be fully referenced within the portfolio.

Additional, relevant on-programme qualification

There are no mandatory qualifications for this standard, however, employers may wish to include relevant qualifications to help structure the on-programme delivery.

Readiness for end-point assessment

In order for an apprentice to be ready for the end-point assessments:

- The employer must be satisfied that the apprentice is consistently working at or above the level set out in the standard. To ensure this, the apprentice must attend a formal meeting with their employer to complete the gateway readiness report.
- The apprentice must have completed the log of all training, learning and workshops they have attended. This **must** be submitted to Highfield at gateway.

- The apprentice must have completed a project portfolio to evidence completion of an improvement project(s). There is **no** requirement to submit this at gateway.
- The apprentice must have achieved Level 2 English and mathematics.
- the apprentice and the employer should then engage with Highfield to agree a plan and schedule for each assessment activity to ensure all components can be completed within a 2-month end-assessment window. Further information about the gateway process is covered later in this guide.

If you have any queries regarding the gateway requirements, please contact your EPA Customer Engagement Manager at Highfield Assessment.

Order of end-point assessments

Both the presentation and questioning around the project report and the professional discussion underpinned by log can take place on the same day. They must take place during month **two** of the end-point assessment window with a minimum of two weeks' notice period given to the employer.

The multiple-choice examination can take place at any point during the end-point assessment window.

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The Highfield Approach

This section describes the approach Highfield has adopted in the development of this end-point assessment in terms of its interpretation of the requirements of the end-point assessment plan and other relevant documents.

Documents used in developing this end-point assessment

IMT (2022)
Improvement Technician / Institute for Apprenticeships and Technical Education

End-point assessment plan (ST0193/v1.1)
https://www.instituteforapprenticeships.org/media/6758/st0193_improvement-technician_l3_ap-for-adj-for-publication-16112022.pdf

Specific considerations
In accordance with the Improvement Technician assessment plan, Highfield have noted that where assessment criteria are not present, these have had to be created based on the standards provided. The assessment criteria have been written based on the standard and the grading criteria from the assessment plan.

For the presentation and questioning and professional discussion, Highfield have taken the decision to allow apprentices the maximum allocated time as stated in the assessment plan.

For the multiple-choice exam, the assessment plan states that 40 questions should be drawn at random for every examination. Highfield have created a bank of questions for the Improvement Technician EPA and questions are drawn from this bank in order to create examination papers that ensure full and comparable coverage of the required knowledge criteria in every examination.

Where the assessment plan has duplicated assessment criteria for the professional discussion in both the merit and distinction columns, we have treated them as merit only. Where assessment criteria have been duplicated in both the pass and distinction columns, we have treated this as distinction only.

The log of evidence must be submitted at gateway to Highfield and must be accompanied by the log evidence matrix. The matrix must be fully completed and signed by both the apprentice and the employer.

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Gateway

How to prepare for gateway

After apprentices have completed their on-programme learning, they should be ready to pass through 'gateway' to their end-point assessment.

Gateway is a meeting that should be arranged between the apprentice, their employer and training provider to determine that the apprentice is ready to undertake their end-point assessment.

The apprentice should prepare for this meeting by bringing along work-based evidence, including the completed:

- log of 13 to 15 pieces of evidence, detailing:
    - one piece of evidence holistically mapped to each knowledge, skill and behaviour that is assessed in the professional discussion
    - all training, learning and workshops attended

For example, an apprentice may write up a meeting with stakeholders to demonstrate working in a team and communication.

- project portfolio to evidence completion of an improvement project or projects

In advance of gateway, apprentices will need to have achieved:

- level 2 English
- level 2 maths

Therefore, apprentices should be advised by employers and providers to gather this evidence and undertake these qualifications during their on-programme training. It is recommended that employers and providers complete regular checks and reviews of this evidence to ensure the apprentice is progressing and achieving the standards before the formal gateway meeting is arranged.

The gateway meeting

The gateway meeting should last around an hour and must be completed on or after the apprenticeship on-programme end date. It should be attended by the apprentice and the relevant people who have worked with the apprentice on-programme, such as the line manager/employer or mentor, the on-programme trainer/training provider and/or a senior manager (as appropriate to the business).

During the meeting, the apprentice, employer and training provider will discuss the apprentice's progress to date and confirm if the apprentice has met the full criteria of the apprenticeship standard during their on-programme training. The **gateway readiness**

report should be used to log the outcomes of the meeting and agreed by all 3 parties. This report is available to download from the Highfield Assessment website.

The report should then be submitted to Highfield to initiate the end-point assessment process. If you require any support completing the gateway readiness report, please contact your EPA Customer Engagement Manager at Highfield Assessment.

Please note: a copy of the standard should be available to all attendees during the gateway meeting.

Reasonable adjustments and special considerations
Highfield Assessment has measures in place for apprentices who require additional support. Please refer to the Highfield Assessment Reasonable Adjustments Policy for further information/guidance.

ID requirements
Highfield Assessment will need to ensure that the person undertaking an assessment is indeed the person they are claiming to be. All employers are therefore required to ensure that each apprentice has their identification with them on the day of the assessment so the end-point assessor can check.

Highfield Assessment will accept the following as proof of an apprentice's identity:

- a valid passport (any nationality)
- a signed UK photocard driving license
- a valid warrant card issued by HM forces or the Police
- another photographic ID card, such as an employee ID card or travel card

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The Improvement Technician Apprenticeship Standard

The following pages contain the improvement technician apprenticeship standard and the assessment criteria in a format that is suitable for delivery.

Compliance
Multiple-choice examination
Knowledge
K1 Legislative and customer compliance requirements including environment and health and safety
Assessment criteria
E1 Identify an employer's main duty under the **Health and Safety at Work Act (1974)** (K1) E2 Explain the purpose of **customer compliance** requirements (K1)
Amplification

• **Health and Safety at Work etc. Act (1974)**
  ○ Employer's responsibilities, including safeguarding the health and safety of all employees and providing them with adequate training.
• **Customer Compliance**
  ○ The managed relationship between a business and its customers. These can range from formal contractual compliance agreements to service-level agreements.
  ○ The effects of meeting customer compliance requirements are important to consider when managing this relationship.
  ○ Regulatory compliance and compliance to internal processes and procedures.
  ○ The consequences of complying/not complying.

Change management
Multiple-choice examination
Knowledge
K5 Roles of the manager and leader within change. Influencing, reinforcement and coaching principles
Assessment criteria
E3 Identify the **key skills a leader needs** to manage change effectively (K5) E4 Describe organisational and individual **barriers to change** and **methods to overcome these** (K5) E5 Identify **the role that coaching can play in supporting change** in the organisation (K5) E6 Recognise how to **reinforce change in the organisation** (K5)
Amplification

• **Key skills a leader needs**
  ○ Including strategic thinking, communication, interpersonal skills, emotional intelligence, empathy and active listening.
  ○ Kotter's 8 Step Change Model.
 	
• **Barriers to change**
  ○ Organisational barriers – no involvement from employees, unclear goals, poor leadership or leadership strategy, ineffective communication, past experience, negative attitude/resistance to change from management or employees, fear of the unknown.
  ○ Individual barriers – comfort in what works now, fear of ability to perform, lack of awareness of the need for change, fear of job security.
  ○ Methods of overcoming barriers and resistance to change – streamlining communication channels and ensuring the benefits of change are understood, communicated clearly and employees are involved in implementing change.
  ○ Coaching principles – using a known coaching model such as GROW, OSKAR, or CLEAR working 1-2-1 with individuals to manage the adverse effects of change, influence outcomes, support development.
 	
• **The role that coaching can play in supporting change**
  ○ Including empowering individuals to play an active part in change.

- **Reinforcing change**
  - Celebrating success, recognising contributions, providing feedback, corrective action and performance management.

Principles and methods
Multiple-choice examination
Knowledge
K6 Six Sigma principles per ISO13053 (International Organisation for Standardisation), interim containment actions, Lean principles
Assessment criteria
E7 Define the focus of **six-sigma** methodology (K6) E8 Explain how **DMAIC** is used for solving problems in Six Sigma (K6) E9 Explain the purpose of interim containment actions in the **8D Framework** (K6) E10 Identify the main principles of **Lean** (K6)
Amplification
Six sigma • A disciplined, data-driven approach and methodology for eliminating defects or solving problems in any process. • A statistical tool used to identify root causes of problems and implement data-driven solutions. • That focuses on quality and consistency, through process improvement and variation reduction, which can have positive long-term effects for the organisation or business. **DMAIC** • DMAIC is a structured process to help carry out improvement projects across any area. The stages are: • define – understanding what the problem is that you are trying to solve (team discussions, etc.) • measure – gathering data to assess where the defects are (reports, data streams, questionnaires, etc.) • analyse – reviewing the data gathered and quantifying each defect and how it contributes to the problem (statistical analysis, team discussions, etc.) • improve – set out plans to improve/eliminate each of the defects identified in 'analyse' (trial and review)

- control – once the improvements are proven, put in measures to ensure this new method is followed going forward (controlled documentation, process parameters, etc.)

8D framework

- Eight Disciplines Methodology is a team-oriented problem-solving methodology. Identifies the root cause of a problem, finds a short-term fix, and then puts in place corrective solutions to eliminate the recurring problem permanently.

8D framework consists of:

- D0 – plan
- D1 – create a team
- D2 – define and describe the problem
- D3 – contain the problem; develop an interim containment plan and actions
- D4 – identify, describe and verify root causes and escape points
- D5 – choose corrective actions, to provide a permanent solution to the problem
- D6 – implement and validate corrective actions
- D7 – take preventive measures
- D8 – congratulate your team

The purpose and impact of each part of the framework.

Lean

- An improvement methodology that focuses on efficiency through minimising waste, errors and delays and visualising and improving value. Lean has 5 key principles which look at improving workplace efficiency:
    - defining value – what is wanted from the process
    - mapping the stream value – identify areas that add value and those that do not (waste)
    - creating flow – after removing waste, ensure remaining process flows well and continuously
    - using a pull system – eliminate stock holding by using a just-in-time delivery and manufacturing process
    - pursuing perfection – although the system is already running, always review for possible improvements
- Principles of Lean production are to provide value to the customer, eliminate waste and continuous improvement.
- Lean methodology commonly uses improvement tools such as 5S, Kanban, Value Stream Mapping and PDCA.

Project selection and scope
Multiple-choice examination
Knowledge
K7 Selection matrix, scoping tree
Assessment criteria
E11 Describe the purpose of a **scoping tree** in selecting a project to undertake (K7) E12 Explain the main benefit of a **selection matrix** (K7)
Amplification

Scoping tree
• A tool to determine the scope of a project: identify, agree and communicate the specific measurable actions the project team will take to improve quality/process.
• It indicates where the boundaries of the project are and enabling a go/no-go decision to be made.
 	
Selection matrix
• This is also referred to as a decision matrix or a Pugh Matrix. This type of matrix allows for set rating scales to determine which projects are to be undertaken, rather than opinions or individual preference, this is deemed the main benefit of using a selection matrix.
• The main factors that determine whether a project is to be undertaken are identified, these can range from but are not limited to:
  ○ risk
  ○ cost
  ○ effort
  ○ time taken
  ○ financial benefit

- business requirement
- It is a good idea to create a set rating scale for each selected criteria this way opinion is minimised as an influence and fact is used.
- Each project is given a rating against each criterion. These ratings are then used to calculate a final grading score. The criteria may be weighted differently if they are deemed more important than others.
- This grading score is the used to show which projects should be undertaken and which ones can be ignored or left to a later date.

Problem definition
Multiple-choice examination
Knowledge
K8 Exploratory data analysis, data collection planning, problem and goal statements
Assessment criteria
E13 Explain **data collection planning methods** (K8) E14 Identify expected outcomes from **exploratory data analysis** (K8) E15 Define the purpose of a **problem statement** (K8) E16 Explain what a **goal statement** should contain (K8)
Amplification
Data collection planning methods • A data collection plan ensures that the data collected is consistent, accurate and fit for purpose. • The plan needs to include information such as where to collect the data, how the data will be collected, when the data will be collected and who will be collecting the data. • The data is then collected using known data collection metrics such as, but not limited to, cost, time, quality, or more quantitative surveys, interviews and observation. • The importance of defining operational definitions when planning data collection. **Exploratory data analysis** • The process in conducting an initial investigation into data to discover patterns, relationships, outliers and anomalies and to test hypotheses with the help of statistics and graphs

- The outcomes from this data analysis method alone cannot be used to make decisions as they represent random samples or experiments and therefore are considered variable results

Problem statement

- A problem statement should provide a concise explanation of an issue or concern that needs to be rectified.
- It should summarise using the current information stating what is the problem, why this is a problem, what is the cause and what needs to be changed.

Goal statement

- Sets out the specific desired outcomes and objectives of a project, created in the define stage in DMAIC or planning stage in 8D. It should state the project context, project purpose and objectives, quality focus and benefits of the project.
- This should be done in time bound and measurable terms.

Process mapping and analysis
Multiple-choice examination
Knowledge
K9 Supplier Input Process Output Customer (SIPOC), process mapping, value and waste analysis, performance metrics - discrete data
Assessment criteria
E17 Identify the benefits of creating a **SIPOC** diagram (K9) E18 Identify the benefits of **process mapping** (K9) E19 Explain the purpose of a **value and waste analysis** (K9) E20 Describe the use of "**discrete data**" in **performance metrics** (K9)
Amplification
SIPOC • SIPOC stands for Suppliers, Inputs, Processes, Outputs, and Customers. In practical terms, SIPOC is a method for describing and improving processes by summarising the inputs and outputs of one or more processes.

- To prepare a SIPOC table, process teams must be capable of mapping the entire operation. They must be able to identify different elements of the process, including who the suppliers are, the inputs required for process execution, the final output, and the customer.
- The SIPOC model allows teams to figure out how S (Suppliers), I (Inputs), and P (Process) are impacting O (Outputs) and C (Customer) needs.

Process mapping

- A visual representation of a process to illustrate the flow of work from one step to the next. When using Six Sigma a process map will use common language symbols.
- These symbols are supported by text to ensure the process and each step is clearly mapped and understood. It helps a team achieve a successful outcome in an improvement project by identifying and quantifying ways to improve the process.
- Can be used to identify the steps in a process and visually compare a current process to a new process.

Value and waste analysis

- In Lean culture waste is anything that does not add value from the customer's perspective. Waste analysis is a core principle of Lean thinking, that involves identifying, quantifying, eliminating, and preventing waste.
- Value-added activities and necessary non-value added activities are considered.
- Removing waste from the value stream is one of Lean's main objectives.
- Value and waste are identified using value stream mapping, this is commonly achieved using Kanban boards.

Discrete data

- A count rather than a measure, for example, how many people in a queue, how many tins of paint, common performance metrics could be:
    - number produced
    - number of steps in a process
    - staff required
    - cost
    - time
    - any other characteristic

Performance metrics

- Measures performance or progress for specific business activities, in the project setting these tend to be time, actual cost, cost variance and resources.

Data acquisition for analysis
Multiple-choice examination
Knowledge
K10 Data stratification, sampling theory, data types, variation types and sources, data collection tools, operational definition and principles of measurement error
Assessment criteria
E21 Explain the purpose of **'data stratification'** (K10) E22 Identify the key factors that affect the size and number of **samples** to take when acquiring data (K10) E23 Define the difference between **continuous and discrete data** (K10) E24 Determine the relevant **data collection methods** appropriate to the requirements (K10) E25 Define the term '**operational definitions'** (K10) E26 Explain the purpose of **output and input data** in establishing measures (K10)
Amplification
Data stratification • The process of sub-dividing data sets into distinct identifiable groups or categories such as shifts, days of the week and suppliers • Dividing data into subgroups can assist with root cause analysis **Samples** • A subset of data from the whole. For example: analysing a sample of 250 participants out of 1000 in a survey. • The sample must be large enough and representative enough and have even coverage, such as gender, age range, product, size and speed, etc. • Consequences of an unrepresentative sample. • The type of data, the objectives of collecting it, margin of error, degree of variability and complexity of the process involved. Confidence level needed in making conclusions must also be considered when deciding on a sample size. **Continuous data** • the type of numerical data that refers to the unspecified number of possible measurements between two presumed points.

- The numbers of continuous data are not always clean and integers, as they are usually collected from very precise measurements. Measuring a particular subject is allowing for creating a defined range to collect more data.
- Variables in continuous data sets often carry decimal points, with the number stretching out as far as possible. Typically, it changes over time. It can have completely different values at different time intervals, which might not always be whole numbers. Here are some examples:
    - the weather; temperature
    - the wind speed
    - the weight of children
- Continuous data can be measured by using specific tools and displayed in line graphs, skews and histograms.

Discrete data

- a count that involves a whole number — only a limited number of values is possible. This type of data cannot be subdivided into different parts. Discrete data includes discrete variables that are finite, numeric, countable, and non-negative integers. In many cases, discrete data can be prefixed with 'the number of'. For example:
    - the number of students who have attended a class
    - the number of customers who have bought different products
    - the number of groceries people are purchasing every day
- This data type is used for simple statistical analysis because it is easy to summarise and compute. In most practices, discrete data is displayed by bar graphs, stem-and-leaf-plot, and pie charts.

Data collection methods

- the type of data being collected and the desired outcome must be considered when deciding what method to use. Responses recorded in a data collection plan can include:
- observations
- questionnaires/surveys
- experiments
- interviews/ focus groups
- case studies
- numerical data
- The methods used can be pivotal to the outcome of the project. Some common methods of data collection and where to use them are:

Method	When to use	How to collect
Survey	To understand the general characteristics or opinions of a group of people.	Distribute a list of questions to a sample online, in person, or over the phone.
Experiment	To test a causal relationship.	Manipulate variables and measure their effects on others.
Interview/focus group	To gain an in-depth understanding of perceptions or opinions on a topic.	Verbally ask participants open-ended questions in individual interviews or focus group discussions.
Archival research	To understand current or historical events, conditions, or performance.	Access manuscripts, documents, or records from libraries, company document, or the internet.

Operational definitions

- should be specific, describe how something is being measured, as well as what is being measured, ensuring the key parameters are clear for everyone. To ensure that data collection is based on common and consistent data for interpretation of results.

Output and input data

- Input data refers to the flow of inputs such as materials into a process from outside the process.
- Output data refers to the amount produced and data and materials flowing out of a process.
- Including both is key as they help to identify key performance indicators that require distinct measurement and their effectiveness (effect on the output measures).

Basic statistics and measures
Multiple-choice examination
Knowledge
K11 Control charts - discrete data
Assessment criteria
E27 Explain the use of a **control chart** (K11)

Amplification
Control Chart • A graph used to evaluate the stability of a process over time • This chart always has a central line which establishes the requirement or the average, an upper line for the upper control limit and a lower line for the lower control limit • These upper and lower control limits establish an acceptable range of variance

Process capability and performance
Multiple-choice examination
Knowledge
K12 Capability analysis - continuous data
Assessment criteria
E28 Describe the purpose of a **process-capability analysis** (K12) E29 Explain why **continuous data** is used in capability analysis (K12)
Amplification
Process capability analysis • An important technique used to determine how well a process meets a set of specification limits or requirements or is performing against a desire outcome. • It is based on a sample of data taken from a process and usually produces an estimate of the DPMO (defects per million opportunities), and therefore an estimate of the Sigma Quality Level at which the process operates. **Continuous data** • Data that can be measured that is not fixed and have an infinite number of possible values. • Provides more precise and accurate measurements and enables the calculation of process capability indices.

• This is used in capability analysis to assess whether a system is statistically capable of meeting the requirements or specification and provides more detailed information about process performance.

Root cause analysis
Multiple-choice examination
Knowledge
K13 Histograms
Assessment criteria
E30 Explain the purpose of a **Histogram** (K13)
Amplification
Histogram • A graphical representative of continuous or discrete data. • Used to display a dataset using segmented columns. • Helps to understand the distribution of a set of data.

Experimentation
Multiple-choice examination
Knowledge
K14 Active analysis versus one factor at a time, Plan Do Check Act
Assessment criteria
E31 Explain the term '**one factor at a time'** (K14) E32 Provide a comparison of **active analysis** and One Factor at a Time when using **experiments**. Identify the benefit of active analysis (K14) E33 Identify uses for the **Plan Do Check Act** approach (K14)

Amplification

One factor at a time
• A problem-solving technique.
• A simple method to test possible factors or causes methodically
• Involves adjusting only one factor at a time while keeping others fixed to see the effect on a process or output.
 	
Active analysis
• The disadvantage of one factor at a time when a large number of factors are involved it becomes inefficient and leads to unnecessary experimental runs.
• When using one factor at a time the experimenter is unable to study interactions between the factors.
• Active analysis allows the variables to be changed when testing a hypothesis using design of experiments therefore allowing a proactive approach to identifying problems and opportunities to improve.
• It can help in the identification of trends and patterns in data.
• It helps in identifying and addressing data quality issues.
• It can promote critical thinking and problem-solving skills.
• However, this method is more difficult and does require stricter controls to ensure the analysis yields measurable results.
 	
Uses for PDCA
• Plan Do Check Act is a 4-stage process used to implement continuous improvement cycles, commonly referred to as a change planning tool:
  ○ **Plan:** recognise an opportunity and plan a change.
  ○ **Do:** test the change. Carry out a small-scale study.
  ○ **Check:** review the test, analyse the results, and identify what has been learned.
  ○ **Act:** take action based on what was learned in the study step.
• If the change did not work, go through the cycle again with a different plan. If it was successful, incorporate what was learned from the test into wider changes. Use what was learned to plan new improvements, beginning the cycle again.
• A few examples of scenarios where the use of the PDCA approach would be beneficial are:
  ○ starting a new improvement project
  ○ developing a new or improved design of a process, product, or service
  ○ defining a repetitive work process

- planning data collection and analysis to verify and prioritize problems or root causes
- implementing any change
- working toward continuous improvement

Identification and prioritisation
Multiple-choice examination
Knowledge
K15 Brainstorming, selection criteria
Assessment criteria
E34 Explain the key benefits of **effective brainstorming (**K15) E35 Define the term '**Affinity grouping'** (K15) E36 Identify **factors to consider when selecting improvement projects** (K15)
Amplification
Effective brainstorming • An unstructured approach without limits or judgement. • Characterised by open positive dialogue with no criticism of any contribution. • Provides a range of perspectives and a sense of teamwork. • Enables all contributions to have equal value and will generate a greater range of suggestions for the given topic. • Ensures equal participation and engagement from all team members. **Affinity grouping** • A mind mapping method in which participants organise their ideas and identify common themes.

Factors to consider when selecting improvement projects

- May include a gap between a current process and the desired process, an unknown or unclear cause and no apparent solution.
- SMART methodology can be used when selecting projects.
    - Specific – is the project defined
    - Measurable – are the outcomes measurable
    - Achievable – is the project realistically achievable
    - Relevant – is the project relevant to the company needs
    - Timed – can a time limit be set to complete the project
- Consult with a range of key stakeholders, including customers and business leaders.
- A team should also consider factors such as cost to implement, effort required to proceed, time needed to complete, company/process requirement, improvement (either performance or financial).
- Factors such as these can be used in an Eisenhower matrix. This type of matrix puts 2 factors in a graph, 1 on each axis and has a scale rating. This graph will create 4 areas. Depending on the factors and how they are scaled will determine which area will depict projects; to do now, to consider later, to delegate and ones to ignore.
- Eisenhower can be used with varying factors on the axis, but most should be used with the 2 most influential factors to the projects.

Sustainability and control
Multiple-choice examination
Knowledge
K16 Process
Assessment criteria
E37 Explain why processes need a **control mechanism** (K16) E38 Summarise **key qualities** of a successful and sustainable process (K16)
Amplification

Control mechanism

- Ensures that processes are monitored to prevent errors or lags and they do not vary from pre-set limits.
- Corrective action begins if unwanted deviations are found.
- Enables a best practice for any process to be maintained, these can often be controlled through standard operating procedures, observation, audit, feedback.
- Essential elements could include measurement, evaluation and control strategy.

Key qualities

- A successful process should be simple, robust, documented, controlled, communicated and error proof.
- They should be measurable, reliable, repeatable and have controls.
- Enable continuous learning and improvement.

Project report, presentation and questioning		
Knowledge	**Skills**	**Behaviours**
K2 Improvement team roles and responsibilities in a change environment **K4** Project charter, Gantt chart, reporting documentation, Red Amber Green (RAG) status, communication (verbal and non-verbal channels) and implementation plans	**S1** Work in accordance with organisational controls and statutory regulations **S3** Plan, manage and implement improvement activities. Identify and support management of risks. Develop the business case for improvement activity and implementation **S4** Engage through communications. Reinforce – positively and negatively. Effectively coach peers	**B1** Clear commitment for identifying opportunities and delivering improvements, pays attention to detail **B4** Acts upon feedback, reflects on performance and has a desire for learning

	S5 Use a structured method and appropriate improvement tools engaging with subject matter experts to deliver business benefits **S6** Identify and scope improvement projects and establish clear measurable objectives **S7** Develop a problem/opportunity statement supported by validated data **S8** Apply techniques to identify customers, their requirements and translate these to metrics **S9** Apply process mapping tools to visualise processes, analyse process performance establishing key insights for performance improvement **S10** Apply techniques such as identification and removal of 8 wastes, 5S (Sort, Shine, Set, Standardise, Sustain), standard work, kaizen, visual displays and controls, error proofing, preventative maintenance **S11** Develop data collection plan and validated measurement processes to understand performance **S12** Establish patterns and trends in data over time using tally, pie, run/trend and pareto charts **S13** Identify common and special cause variation **S14** Analyse product/process performance using good quality data	

	S15 Use cause and effect diagrams, technique of 5 whys and graphical analysis to understand and verify root causes **S16** Identify and prioritise improvement solutions **S18** Create control and reaction plans with detection measures, identify opportunities to embed changes to leverage benefit to the business	

In order to gain a pass, a learner must:

PR1	Show **business benefit** to the apprentice's employer (S18)
PR2	Follow the steps of a recognised problem-solving methodology (e.g. **PPS**, **DMAIC**, 8D) with a clear flow from one step to another and supported by the application/interpretation of appropriate Lean, Six Sigma, project and change management tools (S1, S3, S4, S5, S6, S7, S8, S9, S10, S16, S18)
PR3	Demonstrate **data-backed decision making** to support definition, measurement, analysis and improvement (S11, S12, S13, S14, S15)
PR4	Explanation of why the project was chosen (S3)
PR5	How they used each tool (S5)
PR6	How they worked with others in a team during the project (K2, K4)

In order to gain a merit, a learner must:

PR7	Clearly explains how the outputs of each tool are used to inform the next step (S6, S7, S8, S9, S10, S11, S12, S13, S14, S15, S16, S18)
PR8	Takes the opportunity to share and/or replicate the improvements made to one other area/system where there are differences in the solutions/controls required to deliver successful outcomes (B1)

In order to gain a distinction, a learner must:	
PR9	Takes the opportunity to share and/or replicate the improvements made to one other area/system where there are differences in **baseline metrics** (B1)
PR10	Seeks opportunities to apply Lean, Six Sigma, project and change management tools in daily work (B4)

Amplification and guidance

PR1

- **Business benefit:**
  - can be shown through analysis of the current state or problem, the target or desired state, and evidence that shows how the implementation of solutions has resolved problems or improved process or quality

PR2 - ALL steps in a recognised problem-solving methodology **must** be followed, such as:

- **PPS:**
  - the eight-step approach to practical problem solving. At each stage appropriate project management tools are used according to the complexity of the problem, the root cause, and the countermeasures required.

- **DMAIC:**
  - the interconnected phases of a six-sigma project: Define, Measure, Analyse, Improve, and Control. Each step in the DMAIC Process is required to ensure the best possible results and uses a variety of tools and techniques at each stage appropriate to the problem or project.
- **8D:**
  - Eight Disciplines Problem Solving is a method to approach and to resolve problems. It focusses on product and process improvement to identify, correct, and eliminate recurring problems. It establishes a permanent corrective action based on statistical analysis of the problem and on the origin of the problem by determining the root causes.

PR3

- **Data backed decision making** must show how decisions have been informed using evidence such as:
  - Value Stream Maps
  - Process/Walks or Voice of the Customer Analysis
  - Data collection and analysis supported with visual presentations
  - Use of Cause-and-Effect Analysis, and/or 5 Whys

PR9

- **Baseline metrics:**
  - the starting measures of any improvement project. Baseline metrics in Six Sigma are also known as the before measure. These metrics can be quantitative or qualitative. These baselines are often used as benchmarks for improvement projects.

Professional Discussion		
Knowledge	**Skills**	**Behaviours**
K2 Improvement team roles and responsibilities in a change environment **K3** Different sources for knowledge development	**S2** Share improvement progress through appropriate reporting **S3** Plan, manage and implement improvement activities. Identify and support management of risks. Develop the business case for improvement activity and implementation **S4** Engage through communications. Reinforce – positively and negatively. Effectively coach peers **S17** Recognise the value of sharing best practice	**B1** Clear commitment for identifying opportunities and delivering improvements, pays attention to detail **B2** Helps when asked, works effectively in a diverse team, considers impact of own actions on others, motivates peers **B3** Acts in a moral, legal and socially appropriate manner, aligns behaviours to the organisations values, trusted to working on own when appropriate

		B4 Acts upon feedback, reflects on performance and has a desire for learning **B5** Ensures safety of self and others, challenges safety
In order to gain a pass, a learner must:		
PD1	Demonstrate clear commitment for identifying opportunities and delivering improvements, pay attention to detail (B1)	
PD2	Evidence how they helped when working in a diverse team, consider impact of own actions on others and motivate peers (B2)	
PD3	Act in a moral, legal and socially appropriate manner that aligns to the organisations values and is trusted to work alone where appropriate (B3)	
PD4	Explain how they acted on feedback, reflected on own performance and showed a desire for learning (B4)	
PD5	Ensure the safety of self and others and challenge safety concerns (B5)	
PD6	Explain their role in the team (K2)	
PD7	Explain the different sources used to develop knowledge (K3)	
PD8	Share progress throughout the project (S2)	
PD9	Explain approach to project management including identification and approach to risks (S3)	
PD10	Engage others through change management (S4)	
PD11	Explain how best practice can be shared with others (S17)	
In order to gain a merit, a learner must:		
PD12	Identifies other opportunities for improvement in their area (B1)	
PD13	Uses own knowledge and skills to support colleagues in their application of improvement tools (B4)	
PD14	Takes the opportunity to co-deliver training to upskill colleagues (B1)	
In order to gain a distinction, a learner must:		
PD15	**Critically evaluates** their improvement journey and identifies recommendations for improvement/change (B4)	
PD16	Identifies other opportunities for improvement (B1)	
Amplification and guidance:		
Critically evaluates: • how the project delivery could have been improved by use of different tools, techniques, and approaches • how he/she could have acted differently to ensure any changes to the approach were adopted		

- how those changes could have positively impacted the project outcomes
- what he/she must do in the future to ensure that recommendations for improvement/change are actioned

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Assessment summary

The end-point assessment for the Improvement Technician Apprenticeship Standard is made up of 3 components:

1. 40-minute multiple-choice examination
2. Report, 40-minute presentation and 35 minutes questioning based on an improvement project
3. 50-minute professional discussion underpinned by log

The presentation and questioning around the project report and the professional discussion underpinned by log can take place on the same day. They **must** take place during month **two** of the end-point assessment window with a minimum of two weeks' notice period given to the employer.

The multiple-choice examination can take place at any point during the end-point assessment window.

As an employer/training provider, you should agree a plan and schedule with the apprentice to ensure all assessment components can be completed effectively.

Multiple-choice examination

The multiple-choice examination will contain 40 knowledge-based questions and have a time limit of 40-minutes.

The multiple-choice examination is an open book exam. Reference books can be used but access to the internet is prohibited.

Multiple-choice examination		
Pass	**Merit**	**Distinction**
25-29 marks	30-35 marks	36-40 marks

Project report, presentation and questioning

In order to achieve a pass in the project report, presentation and questioning:

- **all** pass criteria **must** be met

To achieve a merit in the project report, presentation and questioning:

- **all** pass criteria **and** all merit criteria **must** be met

To achieve a distinction:

- **all** pass, merit **and** distinction criteria **must** be met

Professional discussion underpinned by log

In order to achieve a pass in the professional discussion, underpinned by log:

- **all** pass criteria **must** be met

To achieve a merit in the professional discussion, underpinned by log:

- **all** pass criteria **and** all merit criteria **must** be met

To achieve a distinction:

- **all** pass, merit **and** distinction criteria **must** be met

Grading

Each assessment method will be individually graded in line with the conditions outlined above as fail, pass, merit or distinction.

Points will be awarded for each grade achieved in each individual assessment component using the table below.

Assessment component	Points awarded		
	Pass	**Merit**	**Distinction**
Multiple-choice examination	10	20	30
Project report, presentation and questioning	60	120	180
Professional discussion underpinned by log	30	60	90

Points for each assessment component will be added together to determine the overall grade using the table below:

Total points achieved	Overall Grade
Below 100	Fail
100 or above	Pass
200 or above	Merit
260+	Distinction

Apprentices **must** achieve a minimum of a pass in each assessment component to pass the EPA overall.

Retake and re-sit information

Apprentices that fail the EPA will have the opportunity to re-sit/re-take. A re-sit does not require further learning, whereas a re-take does.

Apprentices who fail any **one** EPA method will be offered the opportunity to take a re-sit for that one method. The re-sit/re-take must be taken within one month of notification of the result of the original EPA, otherwise the entire EPA must be retaken.

The re-sit will be graded pass/merit/distinction and combined with the grades for the other 2 assessment methods to determine the EPA grade. If an apprentice fails the re-sit, they will be required to re-take the EPA in full after a period of further learning.

Re-sits are not available to apprentices wishing to move from pass to merit/distinction or merit to distinction.

Apprentices who fail **more than one** of the EPA methods or who have re-taken the EPA in full due to conditions described above will be required to re-take the entire EPA after a period of further learning and the maximum grade awarded will be 'pass' unless Highfield establishes that the reason for the original fail was for reasons beyond the apprentice's control.

In all cases the apprentice's employer will need to agree that a re-sit or re-take is an appropriate course of action. Feedback will be provided on the areas of failure and a retake checklist will need to be submitted when the professional review has taken place.

When your learner is ready to complete their resit or retake, please contact the Highfield scheduling team to discuss this further.

When your learner is undertaking their resit or retake, the assessment method(s) will need to be re-attempted in full, regardless of individual assessment criteria that were

passed on any prior attempt. The EPA report will contain feedback on which areas there are for development along with resit or retake guidance.

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Assessing the multiple-choice examination

The multiple-choice examination will contain 40 knowledge-based questions and have a time limit of 40 minutes. The pass mark for this exam is 25 out of 40.

Multiple Choice Examination		
Pass	**Merit**	**Distinction**
25-29 marks	30-35 marks	36-40 marks

The apprentice may refer to training material/reference books but may not access computer search engines or similar.

A maximum of 12 apprentices per administrator/invigilator are allowed.

Please refer to the Highfield Examination and Invigilation policy for further information regarding the ID verification process and details regarding the set-up of End-Point Assessments.

Before the Assessment

- While on-programme, the employer/training provider should brief the apprentice on the areas to be assessed by the multiple-choice examination.
- In readiness for the end-point assessment, the apprentice should complete a sample examination.
- A sample assessment can be found as a separate download on the Highfield Assessment website.

Multiple-choice examination criteria

Compliance	
K1 Legislative and customer compliance requirements including health and safety	E1 Identify an employer's main duty under the Health and Safety at Work Act (1974) E2 Explain the purpose of customer compliance requirements

Change management	
K5 Roles of the manager and leader within change. Influencing, reinforcement and coaching principles	E3 Identify the key skills a leader needs to manage change effectively E4 Describe organisational and individual barriers to change and methods to overcome these E5 Identify the role that coaching can play in supporting change in the organisation E6 Recognise how to reinforce change in the organisation

Principles and methods	
K6 Six Sigma principles per ISO13053 (International Organisation for Standardisation), interim containment actions, Lean principles	E7 Define the focus of six-sigma technology E8 Explain how DMAIC is used for solving problems in Six Sigma E9 Explain the purpose of interim containment actions in the 8D Framework E10 Identify the main principles of Lean

Project selection and scope	
K7 Selection matrix, scoping tree	E11 Describe the main purpose of a scoping tree in selecting a project to undertake E12 Explain the main benefit of a selection matrix

Problem definition	
K8 Exploratory data analysis, data collection planning, problem and goal statements	E13 Explain data collection planning methods E14 Identify expected outcomes from exploratory data analysis E15 Define the purpose of a problem statement E16 Explain what a goal statement should contain

Process mapping and analysis	
K9 Supplier Input Process Output Customer (SIPOC), process mapping, value and waste analysis, performance metrics – discrete data	E17 Identify the benefits of creating a SIPOC diagram E18 Identify the benefits of process mapping E19 Explain the purpose of a value and waste analysis E20 Describe the use of "discrete data" in performance metrics

Data acquisition for analysis	
K10 Data stratification, sampling theory, data types, variation types and sources, data collection tools, operational definition and principles or measurement error	E21 Explain the purpose of "data stratification" E22 Identify the key factors that affect the size and number of samples to take when acquiring data E23 Define the difference between continuous and discrete data E24 Determine relevant data collection methods appropriate to the requirements E25 Define the term "operational definitions" E26 Explain the purpose of output and input data in establishing measures

Basic statistics and measures	
K11 Control charts – discrete data	E27 Explain the use of a control chart

Process capability and performance	
K12 Capability analysis – continuous data	E28 Describe the purpose of a process-capability analysis E29 Explain why continuous data is used in capability analysis

Root cause analysis	
K13 Histograms	E30 Explain the purpose of a Histogram

Experimentation	
K14 Active analysis versus one factor at a time, Plan Do Check Act	E31 Explain the term "one factor at a time" E32 Provide a comparison of active analysis and One Factor at a Time when using experiments. Identify uses for the Plan Do Check Act approach

Identification and prioritisation	
K15 Brainstorming, selection criteria	E33 Explain the key benefits of effective brainstorming E34 Define the term “Affinity Grouping” E35 Identify factors to consider when selecting improvement projects

Sustainability and control	
K16 Process	E36 Explain why processes need a control mechanism E37 Summarise key qualities of a successful and sustainable process

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Assessing the project report, presentation and questioning

During the 12-15 months leading up to the EPA, the apprentice should have been working on improvement projects and as such, should have produced a project portfolio that details the projects they have been part of.

The project portfolio will then be used by the apprentice to assist them in writing and producing a project report about the improvement project(s) they have been involved with.

The project report is to be submitted to Highfield by the apprentice within one month following gateway.

The improvement project **must**:

- **clearly** demonstrate delivery of a business improvement benefit
- the report will be authorised with a signed statement from the line manager to confirm the project's authenticity and business benefit
- have been completed in the apprentice's workplace
- must address a fundamental business problem
- follow each step of one of the recognised improvement methodologies

In order to achieve a pass in the project report, presentation and questioning:

- **all** pass criteria **must** be met

To achieve a merit in the project report, presentation and questioning:

- **all** pass criteria **and** all merit criteria **must** be met

To achieve a distinction:

- **all** pass, merit **and** distinction criteria **must** be met

Project Brief

The apprentice should be involved in an improvement project that allows them to meet the assessment criteria assigned to this assessment component. The project should involve collaborating with others to identify and analyse failure modes, i.e. the way the failure occurs and its impact. From this, the apprentice should generate appropriate corrective actions for reducing the occurrence of failure modes or improving their detection and continue to work with others to determine the effectiveness of the corrective actions taken.

The project should be suitably planned, in accordance with the sector statutory regulations and organisational policies and controls regarding decision making, finance and legal compliance. A project plan should be developed, as should a project charter, based on initial analysis and lessons learned to meet the project deliverables. They should select and make use of recognised tools and models to obtain and use data and information, and make use of appropriate techniques (failure mode, effects analysis, affinity grouping and selection and prioritisation matrix) to identify and prioritise factors, ideas and solutions. The project should demonstrate application of

appropriate lean techniques (e.g. 5S, standard work, Kaizen, error proofing tools and value stream mapping) to analyse processes and their value to the customer, and identify and categorise waste in the process.

The apprentice should prepare for, plan and run a controlled analysis to check the repeatability/reproducibility, and analyse the results of the study and determine the root cause of any problems. There should be clear demonstration of data-backed decision making to support experimentation and optimisation.

This assessment component is made up of **three** parts:

1. **Project Report**

The project report must be produced during the end-point assessment period and submitted to Highfield within 1 month of the gateway meeting, detailing a substantive improvement project they were part of during the on-programme time, which will be confirmed in writing by their employer. The end-point assessor will read the project report prior to the presentation and questioning.

The report must follow each step of one of the recognised problem-solving methodologies, e.g. 'Define, Measure, Analyse, Improve, Control' (DMAIC), '8 Disciples' (8D), 'Practical Problem Solving'.

The report should:

- be a concise, visual summary
- follow the principles of "A3 Thinking"
- convey key points in a way that enables messages to be grasped "within 3 seconds"
- be typically one to three sides of A3
- include any support documents in an annex which must be submitted with the report and which must be distinct from documents included in the project portfolio

The apprentice should clearly explain:

- the reasons for project selection
- how each improvement tool was used
- the business benefit of the project including a key performance indicator measure (for example, hours saved, or money saved)
- how the apprentice worked with a team of people during this project

The project report **must** be authorised by the means of a signed authenticity document from the apprentice's line manager to confirm authenticity and business benefit.

The written submission sheet that is available to download on the Highfield website must be completed and signed by the apprentice and the employer. This submission sheet must accompany the project report when it is submitted.

The assessment component cannot proceed without the written submission sheet being signed.

2. Presentation

The apprentice will have to produce a presentation based on the project report and deliver this to the end-point assessor who will then be able to question the apprentice based upon the information contained in the presentation.

There is no word or content restriction in the presentation but it must follow each step of one of the recognised problem-solving methodologies.

The presentation **must** also be authorised by the apprentice's line manager to confirm authenticity and business benefit. This will be captured verbally.

The presentation must last for no more than 40 minutes.

A representative of the apprentice's employer must be present during the presentation but only for the purpose of confirming the validity of the information provided.
The assessment component cannot proceed if a representative of the employer is not present.

The employer representative can also provide guidance to the assessor regarding company policy and practice where requested. Internal or external quality assurance staff may also be present.

Presentation format
It is up to the apprentice how this information is presented and can be presented in any format. Acceptable forms of presenting include:

- PowerPoint
- a large copy of the project 'A3' report
- images
- charts

3. Questioning

The apprentice must bring their project portfolio of evidence and all necessary materials to the presentation and questioning.

For each of the required knowledge, skills or behaviours that are not naturally evidenced through the report and presentation, the end-point assessor will need to ask follow-up questions to elicit evidence that the criteria have been attained.

The questioning will last for no more than 35 minutes.

Example questions include:

- tell me about how you work in line with legislation and organisation policies?
- describe how you produced a project plan to schedule activities?
- tell me about a time when you used a problem-solving methodology and an appropriate improvement tool to deliver benefit to the business?

Before the assessment:

- the apprentice must complete a project report based on the improvement project they have been a part of during their time on programme
- the project report must be submitted to Highfield Assessment within one month following the gateway meeting. The presentation will take place within month 2 and the apprentice will be given a minimum of 2 weeks' notice of when the presentation will be.
- the apprentice must create a presentation around the content contained in the project report
- employers/training providers should discuss any relevant improvement projects that have been implemented within the business over the on-programme duration that the apprentice has been present.

Employers/training providers should:

- ensure the apprentice knows the date, time and location of the end point assessment
- encourage the apprentice to reflect on their experience and learning on-programme to understand what is required to meet the standard
- inform Highfield of the apprentice's selected method of presentation
- prepare/check any/all equipment necessary to enable to apprentice to present

Project report, presentation and questioning mock assessment

It is the employer/training provider's responsibility to prepare apprentices for their end-point assessment, and Highfield recommends that the apprentice completes a mock presentation and experiences the mock questioning in preparation for the real thing. The most appropriate form of mock assessment will depend on the resources available and the industry the apprentice has been working on improvement projects in.

The apprentice should be encouraged to practice their improvement project presentation with the employer/training provider before the end-point assessment.

In designing a mock assessment, the employer/training provider should consider the following elements in its planning:

- the subject of the mock presentation should be a real improvement project that the apprentice has been a part of
- the report must show a clear business benefit to the employer
- the presentation can be in any format but must be a concise visual summary
- the key points of the presentation must be grasped within 3 seconds
- apprentices must clearly explain the reasons why they chose the selected project, how each improvement tool was used, the business benefit of the project including a key performance indicator measure (hours saved, money saved, efficiency increase) and how the apprentice worked with a team of people during the project
- the project must follow one of the recognised problem-solving methodologies
- a 75-minute time slot should be made available for the complete presentation and questioning (maximum of 40 minutes for the presentation and maximum of 35 minutes for questioning), if it is intended to be a complete mock observation covering all relevant standards. However, this time may be split up to allow for progressive learning.
- consider a video recording of the mock assessment, and allow it to be observed by other apprentices, especially if it is not practicable for the employer/training provider to carry out a separate mock assessment with each apprentice
- ensure that the apprentice's performance is assessed by a competent trainer/assessor, and that feedback is shared with the apprentice to complete the learning experience; the mock assessment sheets found on the Highfield Assessment website can be used for this purpose

Project report, presentation and questioning criteria

The presentation and questioning will last for a total of 75 minutes during which, the following standards should be evidenced. Apprentices should prepare for this by ensuring their project report is submitted and that they can speak comfortably for up to 40 minutes about this in the presentation.

Project report, presentation and questioning pass criteria	
PR1	Show business benefit to the apprentice's employer (S18)
PR2	Follow the steps of a recognised problem-solving methodology (e.g. PPS, DMAIC, 8D) with a clear flow from one step to another and supported by the application/interpretation of appropriate Lean, Six Sigma, project and change management tools (S1, S3, S4, S5, S6, S7, S8, S9, S10, S16, S18)
PR3	Demonstrate data-backed decision making to support definition, measurement, analysis and improvement (S11, S12, S13, S14, S15)
PR4	Explanation of why the project was chosen (S3)
PR5	How they used each tool (S5)
PR6	How they worked with others in a team during the project (K2, K4)

Project report, presentation and questioning merit criteria	
PR7	Clearly explains how the outputs of each tool are used to inform the next step (S6, S7, S8, S9, S10, S11, S12, S13, S14, S15, S16, S18)
PR8	Takes the opportunity to share and/or replicate the improvements made to one other area/system where there are differences in the solutions/controls required to deliver successful outcomes (B1)

Project report, presentation and questioning distinction criteria	
PR9	Takes the opportunity to share and/or replicate the improvements made to one other area/system where there are differences in baseline metrics (B1)
PR10	Seeks opportunities to apply Lean, Six Sigma, project and change management tools in daily work (B4)

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Assessing the professional discussion underpinned by log

The apprentice must complete a log that details all of the training, learning and workshops they have attended. This log will be completed during the on-programme part of the apprenticeship. This log must have a minimum of one piece of evidence to cover each one of the knowledge, skills and behaviours required for the professional discussion.

The log **must** be submitted to Highfield at EPA gateway. The log is reviewed by the end-point assessor before the professional discussion takes place.

The apprentice must bring a copy of their log to the professional discussion to show the assessor extracts if necessary.

The assessment component **cannot** proceed if the apprentice does not bring their log to the discussion.

The evidence produced is mapped holistically so that one piece of evidence may cover more than one standard set for the professional discussion. Evidence could include the tools and techniques used in improvement projects, and the outcomes achieved in using those tools. Techniques may include mind mapping, value stream mapping and data collection.

The log will typically reference between 13 and 15 pieces of evidence, with at least one piece covering each of the standards. Supporting evidence can be provided by testimony from colleagues, managers or other individuals who have worked as part of a project managed by the apprentice. The log will then be used as the focal point of the professional discussion and as such will not be assessed as a separate assessment method.

The independent assessor will ask the apprentice between 13 and 15 open questions relating to the log and can, if deemed necessary, ask further follow-up questions for clarification to elicit evidence that all the required standards have been attained.

The apprentice will be asked, with reference to their CPD log to explain how the criteria set out below were practically achieved.

Example open questions that might be used could include:

- describe your role in the improvement team?
- give me an example of where best practice was shared with others
- what was the objective of working independently?
- how did you identify own your strengths and areas for improvement?

The professional discussion must **not** last longer than 50 minutes.

A representative of the apprentice's employer must be present during the presentation but only for the purpose of confirming the validity of the information provided. Internal or external quality assurance staff may also be present.

The assessment component **cannot** proceed if a representative of the employer is **not** present. The grades available are fail, pass, merit and distinction.

In order to achieve a pass in the professional discussion, underpinned by log:

- **all** pass criteria **must** be covered

To achieve a merit in the professional discussion, underpinned by log:

- **all** pass criteria **and** all merit criteria **must** be covered

To achieve a distinction:

- **all** pass, merit **and** distinction criteria **must** be covered

Before the Assessment

The log must be submitted to Highfield at the gateway meeting and will be reviewed but not assessed by the end-point assessor before the professional discussion. In providing this evidence for the professional discussion, the Apprentice can demonstrate a commitment to identifying opportunities and delivering improvements on more than one occasion, using appropriate techniques to identify and define improvement opportunities.

Employers/training providers should ensure:

- the availability of quiet and private rooms suitable for all of the end-point assessments to take place with chairs and a standard or larger sized desk available for each apprentice
- that appropriate reasonable adjustments are made with Highfield if an apprentice is declared to the employer as having special needs
- that the apprentice is encouraged to reflect upon their experiences from their on-programme time and how this is relevant to the criteria
- the apprentice is aware of the date/time and location of the assessment
- the apprentice knows which assessment criteria they will be assessed on

It is suggested that a mock assessment is carried out by the apprentice in advance of the end-point assessment with the training provider/employer giving feedback on any areas for improvement.

Further measurement and analysis may have been undertaken to quantity and prioritise projects or activities.
As a result, the Apprentice can provide a clear rationale for how projects have been selected and prioritised.

The Apprentice should then discuss:

- the effectiveness of the tools used to support project management

- Management of risks – A Risk Register, RAID Log or similar tool appropriate to the project is provided with an explanation of how it has been used and its effectiveness in mitigating risks and issues
- own approach to working with others and/or managing the project team
- based on the experience, how the approach to motivating others compared with recognised theories such as Herzberg Two-Factor, McClelland's Need or McGregor's Participation or Vrooms Expectancy Theory
- evidence of occasions when they supported others to deliver outcomes, and the impact of this on motivation of individuals and teams
- how those affected by a project's outcomes were engaged through change management. The approach to change management may be compared to recognised theories such as Lewin, Kotter, Akdar amongst others.
- how a project communication plan was followed to update others on project progress, and how implementation success was shared

The discussion can be summarised with a reflection of own learning journey by the Apprentice.

This can include:

- considered thoughts on own behaviour throughout the project/s, how well it aligns to the organisation's values, and how behaviours and actions protected the safety and well-being of others
- a balanced evaluation of own performance, and examples of where he/she acted on feedback from others during the course of the programme/project

Professional discussion mock assessment

It is the employer/training providers responsibility to prepare apprentices for their end-point assessment, and Highfield recommends that the apprentice completes a mock professional discussion in preparation for the real thing. The most appropriate form of mock assessment will depend on the resources available and the industry the apprentice has been working on improvement projects.

In designing a mock assessment, the employer/training provider should include the following elements in its planning:

- a 50-minute time slot must be made available for the professional discussion
- make sure the mock professional discussion takes place in a suitable location
- consider audio or video recording of the mock professional discussion and allow it to be available to other apprentices, especially if it is not practicable for the employer/training provider to carry out a separate mock assessment with each apprentice
- ensure that the apprentice's performance is assessed by a competent trainer/assessor and that feedback is shared with the apprentice to complete the learning experience. The mock assessment sheets found on the Highfield Assessment website can be used for this purpose.

The employer/training provider can ask up to 15 open questions and can ask follow-up questions if necessary for clarification to elicit evidence that the KSB's have been attained.

The apprentice must be asked open questions with reference to their log to explain how the criteria have been achieved. For example:

- Team Formation and Leadership
    - What is your role in the improvement team?
- Project Management
    - What is your approach to risk management?
- How do you approach risk?
    - What methods do you use to identify risks?
- Benchmarking
    - How would you share best practice with others?
    - What methods do you use to share best practice?
    - How do you identify best practice?

The apprentice will discuss and present the evidence of their training, learning and workshops undertaken.

The log should:

- clearly demonstrate the completion of any training, learning, and workshops attended
- ensure that there is a minimum of one piece of evidence for each required criteria

Professional discussion criteria

During the practical observation, which will last for 50 minutes, the following standards should be evidenced. Apprentices should prepare for the professional discussion by considering how the criteria can be met and by reviewing the evidence contained within their log.

Professional discussion pass criteria	
PD1	Demonstrates clear commitment for identifying opportunities and delivering improvements, pays attention to detail (B1)
PD2	Evidences how they helped when working in a diverse team, considered impact of own actions on others and motivated peers (B2)
PD3	Acts in a moral, legal and socially appropriate manner that aligns to the organisations values and is trusted to work alone where appropriate (B3)
PD4	Explains how they acted on feedback, reflected on own performance and showed a desire for learning (B4)
PD5	Ensures the safety of self and others and challenges safety concerns (B5)
PD6	Explains their role in the team (K2)
PD7	Explain the different sources used to develop knowledge (K3)
PD8	Shared progress throughout the project (S2)
PD9	Explain the approach to project management including identification and approach to risks (S3)
PD10	Engaged others through change management (S4)
PD11	Explain how best practice can be shared with others (S17)

Professional discussion merit criteria	
PD12	Identifies other opportunities for improvement in their area (B1)
PD13	Uses own knowledge and skills to support colleagues in their application of improvement tools (B4)
PD14	Takes the opportunity to co-deliver training to upskill colleagues (B1)

Professional discussion distinction criteria	
PD15	Critically evaluates their improvement journey and identifies recommendations for improvement/change (B4)
PD16	Identifies other opportunities for improvement (B1)

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