Australian Government

Department of Education, Employment and Workplace Relations

MSACMT653A Apply six sigma to process control and improvement

Revision Number: 1

MSACMT653A Apply six sigma to process control and improvement

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit covers the knowledge and skills required to apply six sigma in the workplace for the purposes of process control and process improvement.

Application of the Unit

Application of the unit	This unit covers the skills and knowledge needed by a technical expert in applying the principles and practices of the six sigma approach to competitive manufacturing. in order to minimise defects and make improvements to the manufacturing process. The expert will work with other members of the manufacturing team in applying the six sigma process. This unit requires the application of skills associated with problem solving, initiative, enterprise, planning and organising in order to apply six sigma in the workplace. This unit requires skill in gathering, analysing and applying information and data. Depending on the situation of the enterprise and the complexity of their manufacturing process the following units may also be required in implementing six sigma at an enterprise. • *MSACMT650A Determine and improve process capability* • *MSACMT652A Design an experiment* • *MSACMC410A Lead change in a manufacturing environment* **and**/**or** • *MSACMC611A Manage people relationships* • *MSAPMSUP390A Use structured problem solving tools* • *MSACMS601A Analyse and map a value chain* • *MSACMT451A Mistake proof a production process* • *MSACMT481A Undertake proactive maintenance analyses*

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units	*MSACMT452A*	*Apply statistics to processes in manufacturing*

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance Criteria describe the performance needed to demonstrate achievement of the Element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Review process data	1.1. Review statistical process control (SPC), process capability and other relevant data for area of responsibility/study 1.2. Identify shifts in process performance and processes requiring improvement 1.3. Quantify the shifts in performance which have occurred or which are desired 1.4. Determine cost of shift in performance and cost of intervention 1.5. Identify improvement priorities and degree of intervention
2. Apply DMAIC process to the priority area(s)	2.1. ***Define*** improvement project. 2.2. Determine ***metrics*** and acquire initial data 2.3. ***Analyse*** data and determine possible causes of performance shifts/process improvements 2.4. Develop and trial ***improvement*** solutions 2.5. Control and standardise the improvement
3. Establish/review control strategies	3.1. Determine ***sampling schedule*** 3.2. Analyse data to determine process capability 3.3. Develop ***process control strategy*** 3.4. Confirm strategy with all stakeholders 3.5. Identify skills required to implement and monitor process control strategy 3.6. Arrange where required training for employees in skills and techniques needed for process control strategy
4. Review and confirm improvement	4.1. Calculate and document benefits 4.2. Ensure procedures and other relevant documentation is updated for improved procedure 4.3. Review process data after an appropriate period and confirm the improvement

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• analysis • problem solving • planning and organising • communication • documenting • calculations • use of statistics
Required knowledge
• charting such as Pareto Charts, fish bone diagrams • statistical principles and analysis such as confidence limits • acceptance criteria/confidence levels • DMAIC - Define, Measure, Analyse, Improve and Control methods • process mapping • types of data (eg discrete/continuous/attributes) and their use in six sigma

Evidence Guide

EVIDENCE GUIDE The Evidence Guide describes the underpinning knowledge and skills that must be demonstrated to prove competence. it is essential for assessment and must be read in conjunction with the performance criteria, the range statement and the assessment guidelines of the relevant training package.	
Overview of assessment requirements	Assessment should confirm that the person being assessed is competent to apply six sigma in a work situation. including the development of a process control strategy and setting of metrics.
What are the specific resource requirements for this unit?	Access to an organisation using or intending to use six sigma.
In what context should assessment occur?	Assessment will need to occur in an organisation implementing six sigma.
Are there any other units which could or should be assessed with this unit or which relate directly to this unit?	The following units if not already held should be assessed concurrently with this unit: • *MSACMT452 Apply statistics to processes in manufacturing* • *MEM151A Perform basic statistical quality control* Depending on the situation of the enterprise and the complexity of their manufacturing process the following units could also be assessed concurrently with this unit: • *MSACMT650A Determine and improve process capability* • *MSACMT652A Design an experiment* • *MSACMC410A Lead change in a manufacturing* environmentand/**or** • *MSACMC611A Manage people relationships* • *MSAPMSUP390A Use structured problem solving tools* • *MSACMS601A Analyse and map a value chain* • *MSACMT451A Mistake proof a production process* • *MSACMT481A Undertake proactive maintenance analyses*
What method of assessment should apply?	Assessors must be satisfied that the person can consistently perform the unit as a whole, as

EVIDENCE GUIDE	
	defined by the Elements, Performance Criteria, skills and knowledge. A holistic approach should be taken to the assessment. Assessors should gather sufficient, fair, valid, reliable, authentic and current evidence from a range of sources. Sources of evidence may include direct observation, reports from supervisors, peers and colleagues, project work, samples, organisation records and questioning. Assessment should not require language, literacy or numeracy skills beyond those required for the unit. The assessee will have access to all techniques, procedures, information, resources and aids which would normally be available in the workplace. The method of assessment should be discussed and agreed with the assessee prior to the commencement of the assessment.
What evidence is required for demonstration of consistent performance?	Generally one significant six sigma project or a number of smaller improvement projects would be required to generate sufficient evidence.

Range Statement

RANGE STATEMENT The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
DMAIC	DMAIC is a structured improvement process involving the following stages: • define • measure • analyse • improve • control and standardise
Define	Definition of the project to include: • completed, verified and validated as is process map • SIPOC diagram (describing the Suppliers, Inputs, Process, Outputs, and Customers) • discrepancies to current 'as is' process map • formation and briefing of project team • defining business case for project • problem statement • goal statement • project scope
Metrics	Metrics may include: • identification of key measures/attributes • sampling schedule for project
Analyse	Analyse may include: • statistical analysis of data • root cause analysis • use of various other problem solving/analysis tools
Improvement	Improvement may include: • generation and testing of improvements • selection of appropriate improvements
Control and standardise	Control and standardise may include: • documenting

RANGE STATEMENT	
	• transferring ownership of improved process
Sampling schedule	Sampling schedule may include: • sampling frequency • type of sample/sample method • sample location/type • type of test/data to be collected
Process control strategy	Process control strategy may include: • degree of intervention/rules for resets • SPC tools to be used

Unit Sector(s)

Unit Sector	CM Tools

Co-requisite units

Co-requisite units	

Functional area

Functional Area	