Occupation Profile

Modern Apprenticeship in Digital Technology - Data Analytics Pathway SCQF Level 6

Approved by: Digital Technology Technical Expert Group

Approved date: October 2022

Purpose:

This occupation profile consists of 8 work situations routinely carried out in data analytics roles. Collectively these describe all the performance requirements and knowledge and understanding requirements apprentices need to demonstrate competence in the occupation. Each work situation has a unique reference number and is set out as follows:

- Work situation title, goal, brief outline, performance requirements and knowledge and understanding requirements

Contents

Mandatory work situations

Work Situation

Applying problem solving approaches

Goal of work situation:
To select and apply tools and techniques to solve workplace problems in line with organisational procedures.

Brief outline:
This involves individuals identifying and exploring problems, selecting appropriate approaches, planning problem-solving steps, carrying out and assessing problem resolutions. This also includes documenting problems, resolutions and outcomes.

Performance requirements

1. Diagnosing problems to identify the key characteristics, who it affects, the impact and urgency to resolve it
2. Selecting and justifying the most appropriate problem-solving techniques in line with organisational procedures
3. Developing step-by-step plans to solve problems
4. Performing root cause analysis to identify underlying causes of problems and identify solutions
5. Evaluating potential solutions and selecting the most feasible
6. Implementing solutions to resolve problems
7. Assessing effectiveness of problem resolutions to contribute to continuous improvement activities
8. Documenting problems, approaches, steps taken, techniques applied and outcomes of the problem-solving activities to update knowledge bases

Knowledge and understanding requirements

1. What is meant by problem-solving
2. The importance of problem solving within an organisational context
3. How to diagnose problems to understand the main characteristics, impact, stakeholders and importance
4. Industry standard tools and techniques that can be applied to solving problems and how to apply them
5. How to plan problem solving steps
6. Steps involved in root cause analysis and how to apply them
7. How to evaluate solutions to problems and select the most appropriate
8. How to assess the effectiveness of problem-solving techniques and problem solutions
9. Impact on organisations of poor problem solving
10. How to document problems, problem solving approaches and resolutions
11. The importance of maintaining a knowledge base of problems and their resolutions

Work Situation

Producing documentation to support organisational process delivery

Goal of work situations:
To produce and update documentation for colleagues, customers and users to support the delivery of organisational processes.

Brief outline:
This is about individuals assessing documentation requirements, including audience, type of documentation and structure and format required. This also includes creating documents and associated graphics, identifying sources of information to include, maintaining version and revision control and checking documents meet requirements.

Performance requirements

1. Assessing documentation requirements to plan documentation production
2. Selecting structure and format of documentation in line with organisational style guides
3. Identifying sources of information for documentation to meet organisational requirements
4. Producing and updating documentation in line with organisational procedures
5. Applying version and revision control to document production in line with organisational procedures
6. Creating relevant graphics and visualisations within documentation to aid interpretation and illustrate key concepts
7. Reviewing documentation with stakeholders to ensure requirements are met
8. Following procedures for documentation sign off and storage in line with organisational procedures

Knowledge and understanding requirements

1. Who the stakeholders are for documentation
2. Purpose of the documentation being created
3. How to review documentation requirements
4. Steps involved in planning document production
5. Organisational structure and format style guides for standard documents including detailed and summary reports, plans, guidelines, standard operating procedures and project documentation
6. Industry standard conventions of format, structure and layout in documents and how to select and apply them
7. How to identify, locate and utilise information to include in documentation
8. Organisational policies and regulations for data protection and copyright that apply to documentation production
9. Industry standard tools and techniques used for document production and how to apply them
10. How to produce documentation
11. How to apply version and revision control to document production
12. How to create graphics and visualisations in documentation
13. Organisational procedures for testing and quality checking documentation
14. Organisational procedures for document sign off, version control, storage and distribution

Work Situation

Developing meta-skills and personal practice

Goal of work situation:
To develop meta-skills and personal practice through self-evaluation, agreeing objectives, reflecting on practice, and actively learning to improve own performance in line with organisational requirements.

Brief outline:
This is about developing meta-skills and personal practice. This involves reflecting on and learning from practice; acting on feedback; agreeing and working towards own objectives for continuous personal and professional development. Individuals will be supported in their development, usually by their line manager.

Performance requirements

1. Identifying meta-skills and role specific skills regularly used in own work to assess strengths and improvement needs for personal and professional development
2. Discussing and agreeing SMART objectives for personal and professional development and to achieve business objectives
3. Discussing and agreeing appropriate development activities to improve own performance and to achieve business objectives
4. Completing development activities within agreed timescales to support and progress own performance
5. Acting on feedback to improve own performance and development
6. Reflecting on performance, meta-skills and specific skills developed in your role to identify and agree future development needs
7. Completing mandatory training in line with organisational requirements
8. Completing documentation required for personal and professional development in line with organisation policy and procedures

Knowledge and understanding requirements

1. The purpose and importance of meta-skills including their definitions and how they relate to own work
2. The importance of personal and professional development within own organisation and role
3. How to use reflective practice to identify gaps in role specific knowledge, skills and meta-skills
4. How to participate effectively in performance reviews
5. How to discuss and agree SMART objectives – Specific, Measurable, Achievable, Realistic, Time-bound
6. The importance of business and personal objectives in own development
7. Sources of up-to-date and appropriate information to support own development
8. The importance of maintaining well-being in own role and where to get support
9. How to use feedback to develop own skills and knowledge
10. Different learning models and styles and how to use these for own development

Work Situation

Defining requirements to support project delivery

Goal of work situation:
To identify, understand and define stakeholder requirements for own projects to support project delivery.

Brief outline:
This is about individuals assessing requirements for projects they are tasked with delivering, through engaging with stakeholders to understand project goals and outcomes required. This includes defining and documenting requirements, identifying risks, producing estimates, developing plans and providing progress updates.

Performance requirements

1. Scheduling and attending project requirements meetings with stakeholders to gather project requirements
2. Reviewing project requirement specifications, plans and stakeholder feedback to specify own project tasks, deliverables and timescales
3. Undertaking estimation of own tasks and deliverables in line with organisational procedures
4. Producing task breakdown and project schedules to plan own project activities
5. Identifying key risks to own project to develop a risk assessment
6. Producing progress updates of own tasks to inform project monitoring

Knowledge and understanding requirements

1. Who the internal or external stakeholders are for a project
2. How to schedule and conduct stakeholder requirements meetings
3. How to engage with stakeholders and tailor communication styles
4. How to identify project requirements with stakeholders
5. How to interpret project requirement specifications and plans
6. SMART objectives (Specific, Measurable, Achievable, Realistic and Timebound) and how to apply them
7. Understanding the organisation's approach to managing projects and how this aligns to industry standard approaches
8. Steps involved in producing estimates for own project tasks
9. How to produce task breakdowns and schedules of own tasks and deliverables
10. Steps involved in identifying and assessing risks to own project activities
11. How to track and report own effort and progress on project tasks and outputs delivered
12. How to provide updates on projects and deliverables
13. The importance of developing excellent relationships with colleagues and stakeholders to support own project delivery

Work Situation

Contributing to data management

Goal of work situation:
To contribute to applying organisational data management practices to improve the quality of handling and sharing of data securely in the day-to-day operations of an organisation.

Note: Individuals receive on-the-job training while working under close supervision as they gain experience, typically working on smaller tasks within larger projects.

Brief outline:
This is about individuals contributing to sourcing handling and sharing data. This involves understanding types of data the organisation uses, how and where data is stored and procedures for accessing and sharing data securely. It includes interpreting data models to identify relationships in data to provide for entering and processing data. It also includes documenting data management activities.

Performance requirements

1. Identifying main data types used within an organisation to support data understanding and safe handling of data

2. Evaluating security procedures and approvals that apply to distinct types of organisational data being used to enable access and sharing of data

3. Contributing to sourcing, extracting and sharing data securely in line with organisational data requirements

4. Interpreting data models to determine existing relationships and data flows

5. Contributing to entering and processing data securely in line with organisational standards

6. Contributing to documenting data management activities and metadata in line with organisational procedures

Knowledge and understanding requirements

1. That organisational data is an asset with unique properties that influence its management

2. Main types of data, data structures and data architectures used in organisations

3. Differences between structured and unstructured data

4. Industry standard tools used for handling and sharing data and how to use them

5. Industry standard systems and formats used for on-premises and cloud-based data storage and their implications on data privacy and security

6. Industry standard tools used for entering and processing data and how to apply them

7. The importance and role of governing data

8. Organisational policies and national regulations associated with data management and data protection

9. Data management procedures used by an organisation to maintain high quality data

10. The role of data ownership and associated responsibilities with data

11. Main principles of data access, privacy and security and how to apply these
12. How to source, access and extract data securely from organisational data stores
13. The purpose of data models and the main concepts and principles used in data modelling
14. How to interpret data models
15. What is meant by metadata and how to identify and manage it
16. The need to document the lineage when using and sharing data
17. How to document data management activities

Work Situation

Contributing to data manipulation

Goal of work situation:
To contribute to producing datasets from different data sources that are manipulated into the correct structures to enable analysis.

Note: Individuals receive on-the-job training while working under close supervision as they gain experience, typically working on smaller tasks within larger projects.

Brief outline:
This is about individuals contributing to agreeing dataset requirements, combining data, and restructuring data. This includes identifying quality issues and tidying and cleansing data to provide datasets for analysis and documenting data manipulation activities.

Performance requirements

1. Contributing to reviewing and agreeing dataset requirements with stakeholders to plan data manipulation tasks
2. Loading and combining data from data sources to produce unified datasets in line with requirements
3. Contributing to filtering and reordering data into appropriate structures to tidy and organise the data
4. Contributing to profiling datasets to identify potential data quality issues and cleansing needs
5. Contributing to cleansing datasets to resolve data quality issues in line with organisational procedures
6. Structuring datasets to produce datasets in the required format
7. Contributing to documenting data manipulation activities undertaken and resulting dataset features in line with organisational procedures

Knowledge and understanding requirements

1. Why data manipulation is an important step in data analysis
2. Who the main stakeholders are that define dataset needs
3. How to determine the dataset requirements with stakeholders
4. That data manipulation makes it easier to understand the dataset and helps break it into manageable chunks
5. How to load data from data sources to perform manipulation
6. The industry standard terminology used to describe data manipulation including preparing, transforming and wrangling data
7. How to join and merge multiple datasets from various sources using common keys to combine them into a single dataset
8. Industry standard processes used to filter and reorder data and how to apply them
9. Common data quality issues (including duplicate data, missing values, and outliers) that can arise in datasets and how to check for them by profiling data
10. How to measure and report data quality
11. Main steps involved in tidying and cleansing data and how to apply them

12. Differences between wide and long data formats and how to apply them for structuring datasets
13. How to format datasets to produce final structures required
14. How to provide documentation associated with data manipulation activities

Work Situation

Contributing to data visualisation and reporting

Goal of work situation:
To contribute to developing high quality data visualisations and data reports to provide easy to interpret data insights to stakeholders.

Note: Individuals receive on-the-job training while working under close supervision as they gain experience, typically working on smaller tasks within larger projects.

Brief outline:
This is about individuals contributing to reviewing the structure of data, selecting appropriate visualisation techniques and producing visualisations and reports. This also includes applying automation to visualisation and reporting processes.

Performance requirements

1. Contributing to reviewing the structure of data with stakeholders and agreeing visualisation and reporting requirements
2. Selecting appropriate graphical choices to interpret the data and provide insights
3. Contributing to producing high quality data graphics to provide clear visualisations and insights in line with organisational procedures
4. Contributing to producing data reports and dashboards in line with organisational processes
5. Contributing to automating data visualisation and reporting processes to improve efficiency and speed of production
6. Presenting visualisations and reports to different audiences using the most appropriate media

Knowledge and understanding requirements

1. How to review data to agree visualisation and reporting requirements
2. How to select graphics relevant to data for different audiences
3. Organisational standards, processes, guidelines, best practices and procedures relevant to data visualisation and reporting
4. Benefits of visualisation in presenting data insights
5. The importance of the quality of graphics used to visualise data
6. How to create different forms of visualisation using industry standard tools and techniques
7. Organisation's graphical options and software used to create visualisations and how to use them
8. Different data report types appropriate to stakeholder needs and how to produce them
9. How to automate visualisation and report generation
10. The importance of producing digitally accessible visualisations and reports
11. How to produce data reports, including report fields, report layout, report audience, report distribution frequency and channels
12. How to present visualisations, key findings and report outcomes to different audiences using appropriate media

Work Situation

Contributing to data analysis

Goal of work situation:
To contribute to conducting data analysis using fundamental analytical methods to extract insights.

Note: Individuals receive on-the-job training while working under close supervision as they gain experience, typically working on smaller tasks within larger projects.

Brief outline:
This is about individuals contributing to data analysis. This includes conducting exploratory data analysis to understand data, performing basic statistical analysis, and producing reports of findings.

Performance requirements

1. Exploring data to understand its size and shape
2. Contributing to analysing data to identify trends, relationships and patterns
3. Contributing to checking analysis results against expectations to validate insights obtained
4. Extracting insights from data to enable senior analysts to take action to solve the problem being investigated
5. Contributing to producing reports to describe analysis steps undertaken to stakeholders
6. Contributing to documenting and communicating analysis outcomes and insights obtained to stakeholders

Knowledge and understanding requirements

1. What is meant by data analysis
2. Responsibilities of a data analyst
3. Ethical use of data and ethical data risks
4. Why it is important to understand the size and shape of data being analysed
5. Steps involved in visual inspection and exploratory data analysis and how to apply them
6. Meaning and purpose of analytics approaches including descriptive analytics, diagnostic analytics, predictive analytics, prescriptive analytics
7. Main types of graphs used to analyse data to identify trends and patterns
8. How to interpret graphs and visualisations to identify relationships in data
9. Basic statistical metrics used to summarise a dataset (including mean, median, min, max and count) and how to use them in exploring a dataset
10. How to extract data insights in the context of real-life problems
11. Steps involved in checking and validating analysis insights
12. How to document analysis steps and outcomes and communicate data analysis results

The relationship between meta-skills and work situations

Work situation	Meta skills alignment											
	Adapting	Collaborating	Communicating	Creativity	Critical thinking	Curiosity	Feeling	Focussing	Initiative	Integrity	Leading	Sense making
Applying problem solving approaches	✓		✓	✓	✓	✓	✓		✓	✓		✓
Producing documentation to support organisational process delivery	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓
Developing meta-skills and personal practice	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Defining requirements to support project delivery	✓	✓	✓		✓	✓	✓	✓		✓		✓
Contributing to data management	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓
Contributing to data manipulation	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓
Contributing to data visualisation and reporting	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓
Contributing to data analysis	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓

The table above indicates where there are opportunities to develop and evidence meta-skills in each work situation within the occupation profile. Please note, this information is for guidance, and indicates where meta-skills are explicit rather than an exhaustive list. There may be opportunities for individuals to develop and evidence other meta-skills when carrying out their role.

The relationship between National Occupational Standards and work situations

The table below indicates where there are links between National Occupational Standards and each work situation within the occupation profile

Work situation	National Occupational Standards Alignment
Applying problem solving approaches	ESKITP7034 Problem Management TECHDUPS1 Recognise and resolve routine digital technology problems
Producing documentation to support organisational process delivery	ECHDUWP1 Create and edit digital documents
Developing meta-skills and personal practice	CFABAA626 Plan how to manage and improve own performance in a business environment
Defining requirements to support project delivery	TECDT20341 Undertake system requirements elicitation and definition TECDT20351 Manage system requirements engineering
Contributing to data management	ESKITP801301 Assist in Delivering the Data Management Infrastructure to Support Data Analysis and Reporting
Contributing to data manipulation	ESKITP802301 Assist in Delivering Routine Data Analysis Studies
Contributing to visualisation and reporting	TECIS806301 Assist in developing data visualisations TECHDUBI2 Produce data visualisations to support business insights TECHDUBI1 Create business insight dashboards and reports
Contributing to data analysis	TECHDUBI3 Perform basic business intelligence analysis ESKITP802301 Assist in Delivering Routine Data Analysis Studies