RESEARCH CONCEPTS

UNIT CODE: MATH/CU/AS/CR/01/6/A

Relationship to Occupational Standards

This unit addresses the unit of competency: Develop Research Concepts .

Duration of Unit: 160 hours

Unit Description

This unit describes the skills, knowledge and competences required to: Formulate a research problem, objectives/hypothesis, develop research proposal/literature review, develop sampling procedures, develop data collection tools, develop data analysis framework, develop research budget proposal & time plan, pilot data collection tools, analyse pilot data and validate data collection tools

It applies to leaders or managers using applied research to ensure learning can enhance individual, team and organisational performance. The intended purpose and approach to applied research may vary across a range of contexts and organisations. In this unit, the focus is on applied research to attain improved organisational outcomes.

Summary of Learning Outcomes

1. Formulate a research problem, objectives/hypothesis
2. Develop research Proposal/literature review
3. Develop sampling procedures
4. Develop data collection tools
5. Develop data analysis framework/matrix
6. Develop research budget proposal & Time plan
7. Pilot data collection tools
8. Analyse pilot data and validate data collection tools

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods

1. Formulate a research problem, objectives, research question/hypothesis	• Proposal development
	• Research problem
	   • Definitions of terms
	   • Problem identification
	   • Examples of research problems
	• Research Objectives/hypothesis
	   • Formulation of objectives/hypothesis
	   • Characteristics of objectives/hypothesis
	• Sampling and sampling techniques
	• Importance of sampling
		• Written test
		• Observation
		• Third party report
		• Oral questioning
		• Interviews

Learning Outcome	Content	Suggested Assessment Methods

	• Errors in sampling
	• Types of sampling and their limitations e.g.
	   • Simple random
	   • Multistage
	   • Stratified random
	   • Cluster
	   • Judgmental
	• Referencing and citation
	• Laws relating to Copywriting and plagiarism	

2. Develop research Proposal/literature review	• Format in Proposal writing
	   • Difference between Concept paper and proposal
	• Literature review
	   • Library searches
	   • Internet searches
	      • Google scholar
	      • Research gates
	      • Wikipedia
	   • Citation and referencing
	   • Plagiarism
		• Written test
		• Observation
		• Third party report
		• Oral questioning
		• Interviews

3. Develop sampling procedures	• Definitions of terms
	   • Population
	   • Sample
	• Sample size determination
	   • Means
	   • Proportions
	• Sampling techniques
	   • Probability and Non-Probability
		• Written test
		• Observation
		• Third party report
		• Oral questioning
		• Interviews

4. Develop data collection tools	• Questionnaire development
	• Open and closed ended questions
	• Other data collection tools
	   • Interviews guides
	   • Audio
	   • Document analysis guide
	   • ODK (mobile based data collection tools)
	   • Google forms
	• Other emerging techniques e.g. internet adds
		• Written test
		• Observation
		• Third party report
		• Oral questioning
		• Interviews

Learning Outcome	Content	Suggested Assessment Methods

5. Develop data analysis framework/matrix	• Data analysis tools
	   • Statistical software
	   • Calculators
	• Description of statistical methods/models
	   • Correlation
	   • Regression
		• Written test
		• Observation
		• Third party report
		• Oral questioning
		• Interviews

6. Develop research budget proposal & Time plan	• Budget and Costing Development
	   • Direct costs
	   • Indirect costs
	• Factors to consider when costing
	   • Materials and equipment
	   • Logistics
	   • Administrative
	• Development of Time plan
	   • Gant charts
		• Written test
		• Observation
		• Third party report
		• Oral questioning
		• Interviews

7. Pilot data collection tools	• Pretesting for reliability • Validation of data collection tools • Research assistants	• Written test • Observation • Third party report • Oral questioning • Interviews
8. Analyse pilot data and validate data collection tools	• Data entry • Coding • Cleaning	• Written test • Observation • Third party report • Oral questioning • Interviews

Suggested Methods of Instructions
- Projects
- Demonstration by trainer
- Practice by the trainee
- Discussions
- Direct instruction

Recommended Resources

1   Computer
2   Internet connection
3   Workstation
4   Stationary
5   Printer