IMIN Network Event: Job Analysis for Effective Training and Development

Ronald L. Jacobs, Ph.D.

Professor, Human Resource Development
University of Illinois

Principal, RL Jacobs & Associates

Session Agenda

A. Introductions

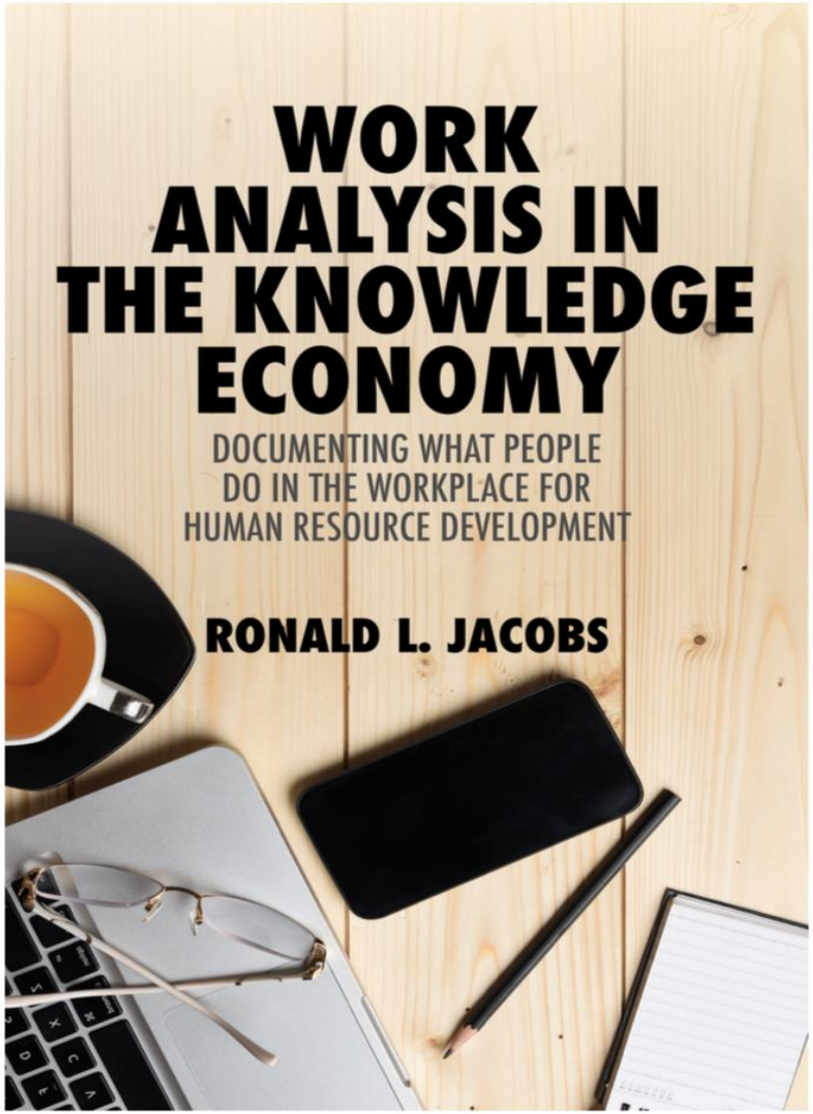
B. Understanding Work Analysis

C. Structure of Jobs

D. Job Analysis – DACUM

E. Using Job Analysis Information

F. Discussion



Part I – Introduction to Work Analysis

Chapter One: Defining Work Analysis
Chapter Two: Human Resource Development and Work Analysis
Chapter Three: Work Analysis Roles and Process
Chapter Four: Structures of Work

Part II – Work Analysis Techniques

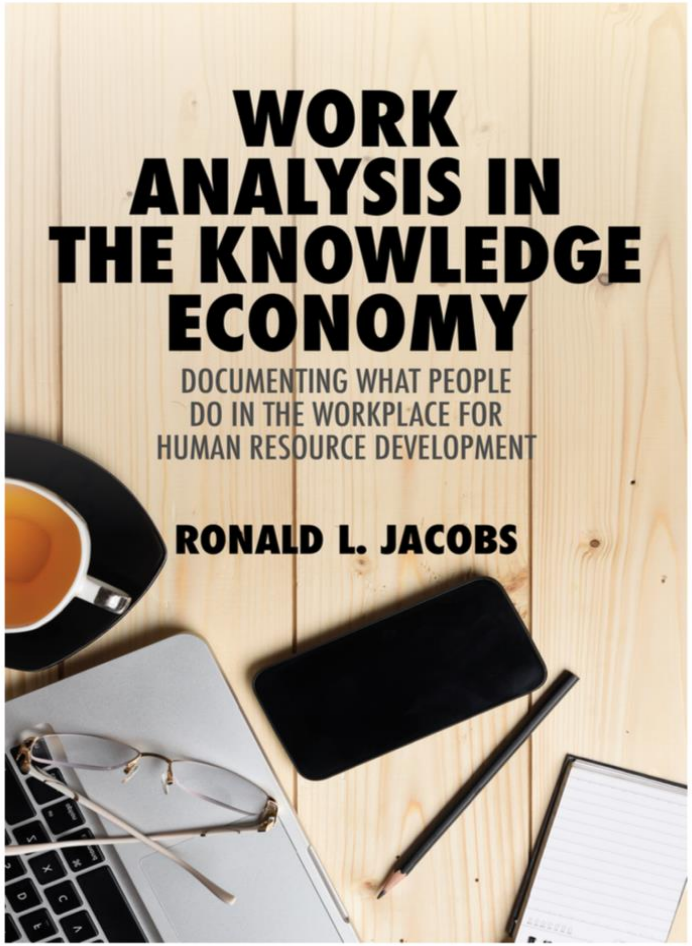
Chapter Five: Job Analysis and the DACUM Process
Chapter Six: Task Analysis
Chapter Seven: Occupational Analysis
Chapter Eight: National Occupational Standards
Chapter Nine: Critical Incident Technique
Chapter Ten: Work Processes
Chapter Eleven: Individual Competencies
Chapter Twelve: Conducting a Competency Analysis

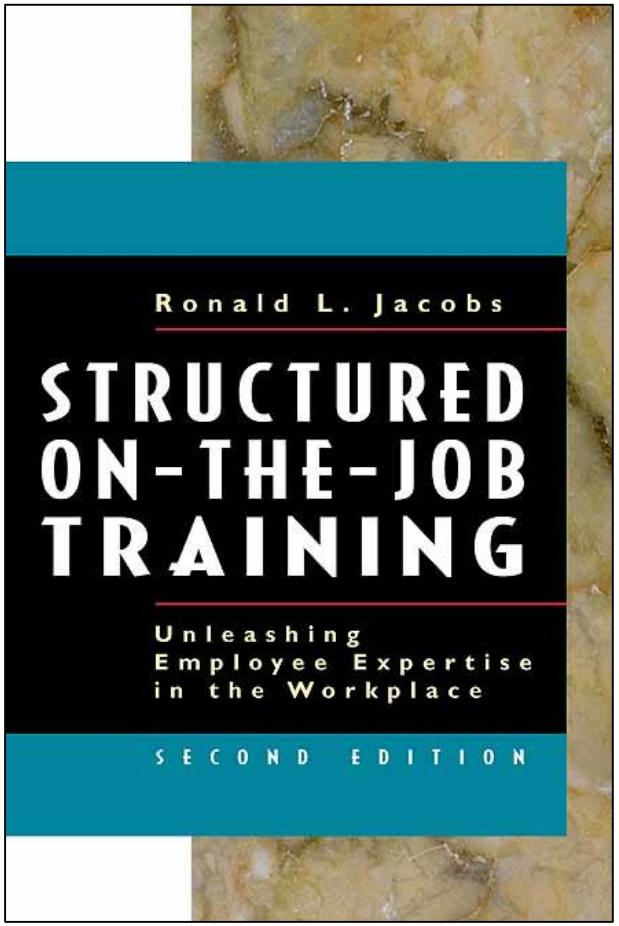
Part III – Using Work Analysis Information

Chapter Thirteen: Task Statements and Training Design
Chapter Fourteen: Structured On-the-Job Training Modules
Chapter Fifteen: Performance Support Guides
Chapter Sixteen: Performance Rating Scales
Chapter Seventeen: Competency Assessment and Development

Part IV. Future Perspectives

Chapter Eighteen: Knowledge Work and Digital Talent
Chapter Nineteen: Future Directions of Work Analysis


WORK ANALYSIS IN THE KNOWLEDGE ECONOMY
DOCUMENTING WHAT PEOPLE DO IN THE WORKPLACE FOR HUMAN RESOURCE DEVELOPMENT
RONALD L. JACOBS


Ronald L. Jacobs
STRUCTURED ON-THE-JOB TRAINING
Unleashing Employee Expertise in the Workplace
SECOND EDITION

Work

Purposeful activity that provide for the livelihood of individuals and organizations.

Analysis

Process of taking something apart to examine its component parts.

Work Analysis

In a broad sense, work analysis is the process of documenting what people do in the workplace.

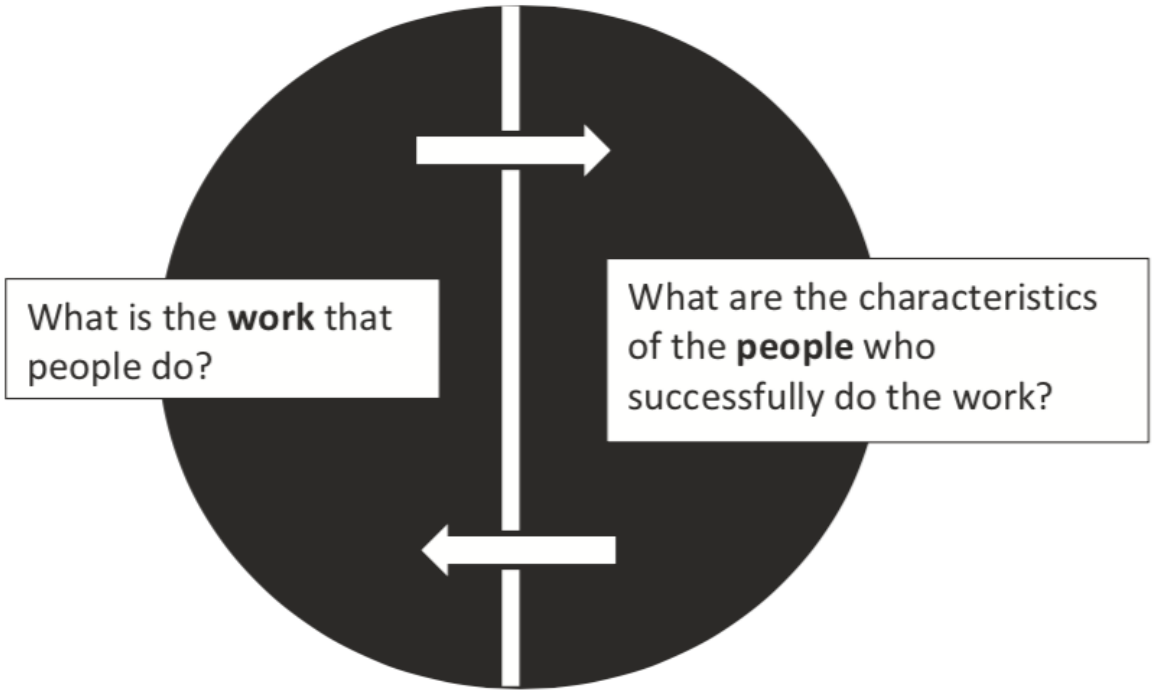
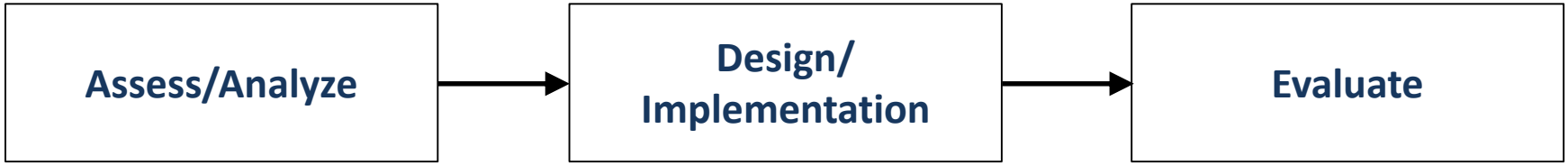


Fig. 1.1 Two major components of work analysis

Table 1.1 Techniques related to the components of work analysis

Documenting the work	Understanding the people
• Job analysis—DACUM • Task analysis • Occupational analysis • National occupational standards • Critical incident technique • Work process analysis	• Competency analysis • Competency assessment

HRD Process

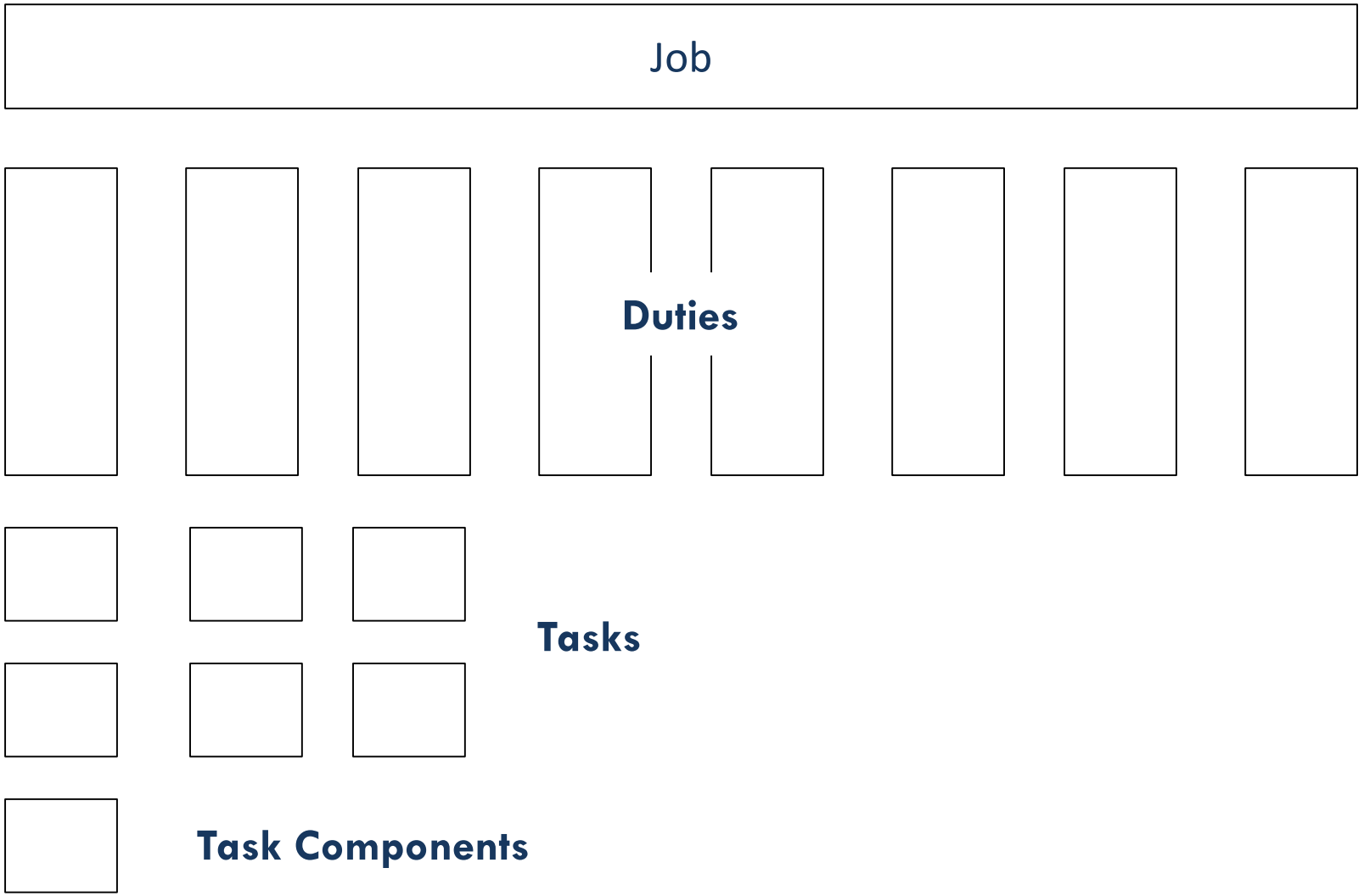


Strategic Planning	Employee Development	Acceptance
Needs Assessment	Organization Development	Improvement
Performance Analysis	Career Development	Institutionalization
Work Analysis	Performance Support	

HRD Component	Uses of Work Analysis
• **Employee Development**	• Identify the objectives of training programs • Identify content of training and education programs • Design classroom-based training programs • Design structured on-the-job training (S-OJT) programs • Construct performance rating scales • Construct cognitive test items • Identify potential safety hazards • Identify quality criteria for performing the work
• **Organization Development**	• Develop job descriptions • Develop job standards • Develop job performance evaluations • Document “what is” and “what should be” of work processes • Form the basis of performance improvement activities • Meet quality management requirements • Conduct audit of the HR function
• **Career Development**	• Develop selection and promotion tests • Match people with the right jobs during selection • Identify the prerequisite knowledge, skills, and attitudes of jobs • Match special skill requirements and disability • Develop national occupational standards • Develop technical training and education programs matched with occupational standards
• **Performance Support**	• Prepare company manuals, work instruction sheets, standard operating procedures • Develop job performance guides

Structure of Jobs

- All jobs have an underlying structure
- Even in today's dynamic environment: Reduced job boundaries, Rapidly changing expectations, Greater complexity
- Greater complexity towards knowledge work: How we approach work, What kind of work we do
- Even discussions about digital talent, digital transformation, artificial intelligence – the notion of job remains
- All jobs have an underlying structure


Job
Duties
Tasks
Task Components

Job

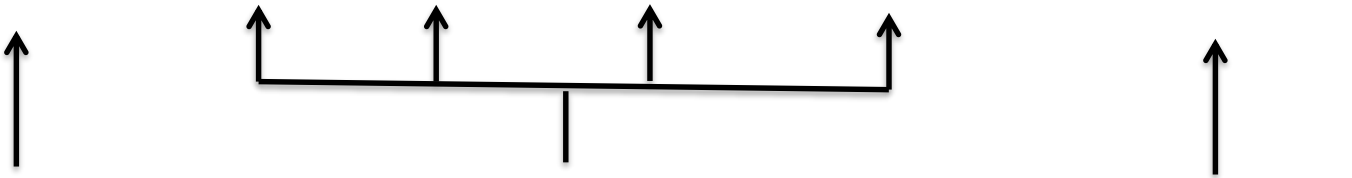
A formally designated role, as defined by a title and an accompanying description, to identify the responsibilities in a particular context.

Duty

- Statement that describes a related grouping of tasks
- Has an in-process orientation
- Verb ends in “ing” form (Present participle form of verb)
- Usually at least five to 12 duties per job
- Represents the largest set of outcomes within a job

Duty Statement

Preparing the Back Office Network Operation Maintenance Plan



On-going Action Verb

Qualifiers

Object of the On-Going Action

Job Title: Team Member

Duty Statements:

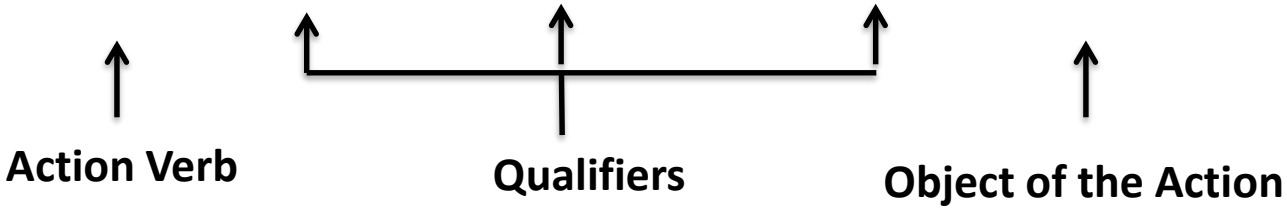
A. Operating production equipment
B. Assembling component parts
C. Inspecting products for defects
D. Ordering materials from suppliers
E. Scheduling production operations
F. Preparing production charts
G. Troubleshooting production operation problems
H. Performing preventative maintenance

Task

- Has a definite beginning and ending
- Can be performed over a relatively defined set of time
- Can be performed independent of other work
- Consists of multiple component parts
- Have results that are measurable
- Provides the basis for future action, assignable work

Task Statement

Inspect the back office network operation



A **Analyzing the network maintenance plan**

1. Analyze the network KPIs
2. Collect the network information
3. Analyze the network service, architecture, and security
4. Prepare recommendations for improving the network maintenance plan

B **Implementing the change management process**

1. Prepare the change plan
2. Present plan to management
3. Implement the change management plan

C **Identifying preventive measure to address IP network problems**

1. Design an evaluation plan for monitoring IP problem
2. Manage the IP network performance
3. Prepare daily report on IP problems
4. Present preventive solutions to front office

D **Managing IP network Tier 2 trouble tickets**

1. Gather trouble-ticket related information
2. Analyze trouble-ticket related information
3. Decide the solution to resolve IP network faults
4. Implement the selected solutions
5. Inspect whether the solution solved the IP network fault

Job Analysis

The process of documenting information related to a certain role in an organization. A job analysis can generate all or parts of the following information:

- Job title and the job description
- Broad areas of responsibility or the duties within the job
- Units of work or tasks within the broad areas of responsibility
- Specific component behaviors within the tasks
- Prerequisite knowledge, skills, and attitudes required to do the work
- Quality information related to the work
- Safety information related to the work
- Resources required to perform the job

Job Analysis - DACUM (Developing a Curriculum)

DACUM is a group process, first developed in the late 1960s to analyze the content of occupations for use in technical school settings.

Since that tine, DACUM has been used in many settings and purposes. DACUM is now one of the best known job analysis methods.

DACUM brings together subject-matter experts (SMEs) who have knowledge of the work, often from different perspectives.

A trained facilitator – who is often not an SME – coordinates the process with the group of experts, called a panel.

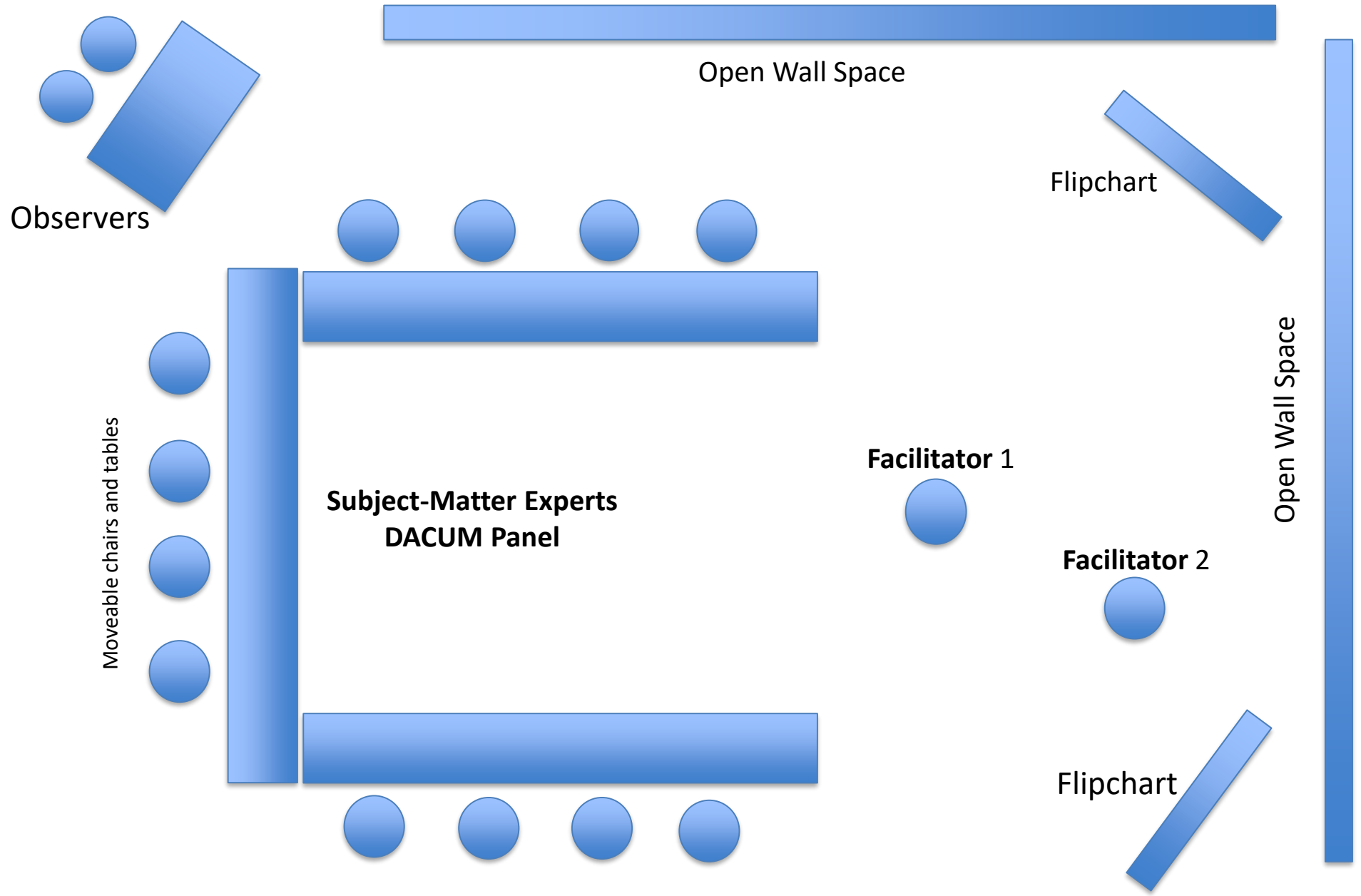

Professional Development
Communicating
Planning
Administration/ Budgeting
Counselling/ Support to Students
Development of Materials
Instruction
SKILLS
ATTITUDES
KNOWLEDGE

Job Analysis Process

I. **Prepare to Conduct the Job Analysis**
   a. Identify the job title
   b. Become familiar with the job using a range of sources and methods
   c. Prepare a summary of the information for reference during the process

II. Conduct the Job Analysis
   a. Bring together the subject-matter experts (SMEs)
   b. Provide an orientation to the SMEs: Purpose, Process, Definitions, Outputs, Rules
   c. Present the 1st prompt question: What are the major activities (duties) of this job?
   d. Post responses for group discussion and consensus
   e. Present the 2nd prompt question: What are the tasks within each duty?
   f. Post responses for discussion and consensus
   g. Present draft chart for panel review
   h. Manage group process of panel
   i. Present the 3rd prompt question: What are the prerequisite competencies, prerequisite knowledge and skills, resources, key terms?

III. Verify the Results of the Job Analysis
   a. Prepare final chart and additional information for review
   b. Conduct final review of chart from panel
   c. Obtain final management and expert approvals


Open Wall Space
Observers
Flipchart
Open Wall Space
Moveable chairs and tables
Subject-Matter Experts
DACUM Panel
Facilitator 1
Facilitator 2
Flipchart

Job Analysis Chart

- Job Title
- Panel members
- Analysts
- Duties
- Tasks for each duty
- Prerequisite knowledge, skills, experiences
- Resources: tools, equipment, software, documents
- Future Trends and Issues
- Additional information about the chart

DACUM Chart for Electrical Maintenance Engineer

DACUM Panel

Abdulla Al-Bahouh
Sr. Elect. Engineer (SHU)
Abdulla I. Moh'd
Sr. Engr. Electrical Maintenance (MAB)
Hesham M. Al- Hasan
Snr. Elect. Maint. Engineer (MAB)
Mane Al- Ajmi
Lead Electrical Engineer (MAA)
Mohammed I. Balousha
OJT Trainer (SHU)
Moh'd Kamel Elsify
Electrical Maintenance Engineer(MAA)
N. K. S. Menon
OJT Trainer (MAB)

DACUM Facilitators

Mohammad Bu-Rahmah
Sr. Supervisor Personnel Development
Yacoub Al-Tarrah
Chief Trainer & OJT Coordinator

Reviewed by
Dr. Ronald L. Jacobs,
expert on **S**tructured **O**n-**T**he-**J**ob **T**raining and Professor of Human Resource Development, The Ohio State University, USA.

شركة البترول الوطنية الكويتية (ش.م.ك)
KNPC

Produced by

دائرة التطوير الوظيفي
قسم التدريب على العمل
CAREER DEVELOPMENT DEPARTMENT
ON JOB TRAINING DIVISION

Approved by:
General Manager – MAB Refinery

Date 29 September 2004 (Ver.5)

Job Title: Electrical Maintenance Engineer

Date: 29.9.2004

Duties	Tasks				
A Following SHE Practices	A-1 Familiarize with SHEMS elements	A-2 Participate in SHEMS elements implementation (as assigned)	A-3 Attend all relevant SHE training	A-4 Implement SHE rules and regulations	A-5 Observe compliance to SHE standards
	A-6 Participate in SHE campaigns	A-7 Participate in SHE audits (when nominated)	A-8 Conduct electrical SHE audit in sub-stations and operating units (MAA)	A-9 Participate in SHE accident/ incident investigations (when nominated)	A-10 Motivate fellow employees towards good SHE practices at work place	A-11 Provide safety suggestions to SHE
	A-12 Familiarize with MIPP and OSRP	A-13 Participate in emergency drills and evacuation drills (mock drills)	A-14 Follow up for implementation of SHE audit/ recommendations till closure	A-15 Ensure disposal of waste elect. equipment as per solid waste mgmt. procedure		
	A-16 Conduct tool box talk for employees	A-17 Participate in updating/revising SHE related manuals/formulate new procedures	A-18 Ensure compliance of electrical maintenance practices to SHE rules and regulations	A-19 Prepare necessary reports as required by SHE regulations		
B Conducting Routine Electrical Activities	B-1 Inspect electrical area/shift log book	B-2 Review work list prepared by maintenance planning	B-3 Plan daily electrical maintenance activities	B-4 Coordinate work with maintenance planning and operations	B-5 Arrange materials and equipment for routine electrical work	
	B-6 Schedule work for contractors and electrical maintenance supervisor	B-7 Monitor electrical equipment and sub-stations	B-8 Inspect electrical equipment and sub-stations	B-9 Report abnormalities to superiors	B-10 Follow-up implementation of routine activities with electrical contractors and supervisors	
	B-11 Endorse work completion certificates (yet to be implemented)	B-12 Maintain archive of routine activities				
C Maintaining Business Requirements of Electrical Maintenance	C-1 Participate in electrical relevant meetings	C-2 Participate in various task force committees when nominated	C-3 Conduct training and orientation for visitors and UDs	C-4 Conduct presentations related to electrical maintenance (in-house and management)		
	C-5 Review electrical maintenance manpower time sheets	C-6 Prepare materials, personnel and vehicle gate passes	C-7 Prepare electrical reports (e.g. power consumption, break downs etc.)	C-8 Prepare MPA, petty cash requests, and service requisitions	C-9 Assist senior engineer in preparing budgets for fixed assets	C-10 Interview electrical maintenance personnel	C-11 Familiarize new contractors with electrical and A/C maintenance
	C-12 Conduct technical discussions with electrical vendors and consultants	C-13 Prepare electrical maintenance correspondence	C-14 Manage administrative work of electrical maintenance subordinates (i.e. appraisal, leave, schedule)				
D Performing Electrical Equipment and Preventive Maintenance	D-1 Become familiar with vendor electrical equipment, P.M., manuals, and data		D-2 Request Maintenance Planning to update PM list and procedures for new electrical equipment		D-3 Inspect electrical maintenance PM list		
	D-4 Confirm with maintenance planning for compliance of time schedules	D-5 Secure resources required for PM	D-6 Train contractors and subordinates to carry out PM	D-7 Ensure isolation of electrical equipment for PM (i.e. multiplex, rack out etc.)		D-8 Supervise the execution of PM on electrical equipment	D-9 Inform superiors about abnormalities in PM and corrective actions
	D-10 Advise superiors on changes on electrical equipment	D-11 Carry out testing as per the PM procedure, wherever required	D-12 Certify the completion of PM jobs	D-13 Ensure that electrical equipment is back in use	D-14 Advise maintenance planning for the completion of electrical PM		
	D-15 Supervise mechanical repairs for electrical equipment	D-16 Ensure electrical equipment history cards					
E Troubleshooting Electrical Equipment Problems	E-1 Respond to equipment emergencies to determine if electrical related		E-2 Respond to calls to electrical equipment failures and abnormalities	E-3 Respond to electrical equipment failures and abnormalities	E-4 Identify causes of electrical failures and abnormalities		
	E-5 Investigate the causes of electrical failures and abnormalities	E-6 Report to superiors/others on nature of equipment failures, i.e. if it is electrical failure or not		E-7 Analyze electrical failures and abnormalities	E-8 Advise superiors on any changes to electrical equipment	E-9 Request support from concerned parties to carry out corrective actions (trust, technical supplies)	
	E-10 Isolate the location of failed electrical equipment	E-11 Solve the electrical failures and abnormalities	E-12 Secure the required materials to solve electrical equipment problems	E-13 Test the performance of electrical equipment	E-14 Monitor the performance of electrical equipment (if required)		
	E-15 Review RCA options of electrical equipment failures	E-16 Prepare electrical equipment reports	E-17 Supervise mechanical repairs on all electrical equipment		E-18 Follow up on electrical equipment recommendations		
F Managing Technical Document Correspondence	F-1 Prepare electrical scope of work for projects	F-2 Participate in preparing scope of work for electrical service contractors	F-3 Review contract specifications prepared by engineering and commercial		F-4 Advise superiors for final issuance of tender documents		
	F-5 Provide justification for tender documents (if required)	F-6 Participate in pre-tender meetings	F-7 Participate in evaluation of contracts and offers (i.e. VEC/CEC)	F-8 Conduct site visits to vendors premises	F-9 Provide technical comments for drawings, specifications, or modifications as requested		F-10 Prepare replies for technical memos
	F-11 Provide technical evaluation of materials (new and existing) to concerned departments		F-12 Distribute electrical drawings/technical documents at substation/ UPS rooms		F-13 Update electrical drawings for any modifications		

Duties		Tasks				
G	Managing Electrical Equipment Testing	G-1 Become familiar with testing requirements for specific electrical equipment (e.g. fire alarm system, generator test)		G-2 Prepare work lists of electrical equipment to be tested	G-3 Ensure the operability of the electrical testing equipment	G-4 Prepare sites for electrical testing
		G-10 Ensure disposal of waste electrical equipment as per solid waste management procedure		G-11 Prepare testing reports of electrical equipment	G-12 Update electrical equipments testing records	
H	Performing Electrical Maintenance and S/D Activities	H-1 Prepare electrical S/D work lists in coordination with maintenance planning		H-2 Review maintenance planning final S/D work lists		H-3 Ensure the availability of all related documents to electrical S/D for S/D executers
		H-8 Report progress to superiors and maintenance planning	H-9 Advise superiors of electrical S/D activities completion	H-10 Participate in electrical S/U activities (if required)	H-11 Participate in post S/D meetings	H-12 Update electrical equipment history cards
I	Managing Project Implementation	I-1 Become familiar with documents and project scopes of work	I-2 Review the availability of resources required for the in-house projects	I-3 Participate in kick-off meetings (if required)	I-4 Advise superiors on the commencement date for the in-house projects	
		I-10 Participate in commissioning of in-house project	I-11 Prepare punch lists for in-house projects	I-12 Prepare completion certificates for in-house projects	I-13 Certify the contractors invoice for payment (in-house projects)	
J	Inspecting Electrical Equipment and Materials	J-1 Review inspection of electrical documents from other sections/vendors		J-2 Comment on electrical documents received from inspection	J-3 Participate in electrical equipment inspection	J-4 Witness electrical equipment inspection tests
		J-9 Inspect the electrical materials at KNPC premises for specification acceptance		J-10 Advise departments on acceptance of electrical materials and equipment		

G-5 Coordinate with operations safe operability of electrical equipment	G-6 Conduct electrical equipment testing (if required)	G-7 Supervise electrical equipment testing by contractor or supervisor	G-8 Report testing abnormalities to superiors	G-9 Implement corrective actions in consultation with superiors	G-10 Supervise testing of electrical equipment for PM (i.e. machine monitoring)	
H-4 Secure electrical materials and manpower for S/D activities (reservation/procure)		H-5 Prepare scopes of work for electrical work carried out by specialized vendors (if required)		H-6 Participate in S/D pre-meetings and S/D meetings	H-7 Supervise the electrical S/D activities in coordination other division/departments	
I-5 Handover the project site to contractors		I-6 Follow-up the contractor's bar chart schedule for in-house projects	I-7 Supervise the implementation of in-house projects	I-8 Participate in-house progress meetings	I-9 Approve technical specifications, drawings, and materials received from contractor	
J-5 Prepare comments on punch listed items after electrical equipment tests		J-6 Prepare related electrical equipment inspection reports		J-7 Follow up with vendor for necessary rectification (if required) based on electrical equipment inspection reports		J-8 Re-inspect electrical equipment and materials for acceptance

DACUM Chart for Electrical Maintenance Engineer

General Knowledge and Skills
- English language skills
- Communication Skills
- Initiative
- Electrical maintenance of oil sector
- Understand electrical engineering drawings
- Computers
- Technical writing
- Supervisory skills
- Physical fitness
- Adaptability to change
- Awareness of international electrical standards
- Decision Maker

Prerequisite Courses
- English Language
- Technical Report Writing
- Computer Skills
- Reading Electrical Engineering Drawings
- Electrical Engineering Standards & Codes
- Fundamental Training
- SHE Rules, Regulations & Area Classifications
- Refinery Orientation
- Electrical Equipment and Systems Used in Oil & Gas Industries

Future Trends and Concerns
- Career Path
- Equal Opportunities
- Training Courses to of Practical Nature
- Increasing Elect. Eqpt. Failures due to ageing
- Non- related paper works
- Changing of policies/procedures
- Work Load
- Increasing complexity of electrical equipment
- Ability to follow instructions
- Office Working Environment

Glossary
- Equipment – As per NEC Code/Chapter 1
- Normalize – Restore Elect. Eqpt. Back to service
- Emergencies – Apply Elect. Supply to equipment
- Rack in – Insert Circuit Breaker in Service Position
- Rack Out – Withdraw Circuit Breaker out of compartment

Worker Behaviors
- Time keeping
- Honesty
- Sincerity
- Cooperativeness
- Communication skills
- Follow Instructions
- Team Player
- Open mindedness
- Initiative
- Hard worker

Development Courses
- Maintenance of Fire Alarms
- Maintenance of UPS
- Time Management
- Communication Skills
- Handling Stress
- Planning Skills
- Elect. Motor Overhauling
- Supervisory Skills
- Hazardous Classifications
- Computer Skills
- Electrical System Distribution
- Problem Solving
- Cathodic Protection
- Tech Report Writing
- Switch Gear/Transfer Maintenance
- RCA, RCM, Hazop
- Maint. Testing of Elect. Protection Relays
- SHE
- Stress Relieving
- Elect. Maint. Of Motors & Generators
- Electrical grading system & Electrical Safety

Tools, Equipment, Supplies & Materials
- PC & Accessories
- Working Office with Equipments
- PPE
- Pool Cars

Acronyms
- NO- Normally Open
- PM – Preventive Maint.
- L/S – Limit Switch
- S/D – Shutdown
- MOV – Motor Operated Valve
- GRTA – General Refinery Turnaround
- MCCB – Molded Case Circuit Breaker
- MRTA - Major Refinery Turnaround
- DB – Distribution Board
- HT- High Tension LT – Low Tension
- MCB – Miniature Circuit Breaker
- MPR – Motor Protection Relay
- SW GR – Switch gear
- AVR – Automatic Voltage Regulator
- SR- Automatic Rack
- M – Motor
- MRR – Material Requisition Request
- T/ R- Transfer Rectifier Unit
- UPS – Uninterrupted Power Supply
- OCB – Oil Circuit Breaker
- MCC- Motor Control Center
- ATS - Automatic Transfer Switch
- Is- Peak Current Limiter
- BCH –Battery Charger
- DG- Diesel Generator
- BB – Bus Bar
- MIPP – Major Incident Protection Plan
- OSRP – Oil Spill Response Plan

- **Sources of Information**
  Who (or what) will provide the information?

- **Methods of Gathering the Information**
  How will you get the information?

Sources of Information

- **Job Incumbents** – This is another term used for individuals who are currently in a job or role, and who are presumed to be most knowledgeable about they do on their jobs or roles.
- **Managers and Supervisors –** These individuals often have a perspective about the work as they may been a job incumbent at one time or they now oversee the work of the job incumbents.
- **External Experts –** These individuals are outside of the context in which the work analysis is occurring, and through their unique background or experience have knowledge and skills related to the work.
- **Instructors and Trainers –** These individuals may not be actually performing the work, but they often have knowledge about the work based on their experiences in delivering the information to others.
- **Senior Managers and Executives –** These individuals possess an understanding about the mission, vision, and other high-level sets of information.
- **Job Postings and Descriptions –** These documents can be obtained from the human resource function of organizations, and provide a general sense of the requirements, responsibilities, and other information about the work.
- **Internal Documents –** These documents, such as previous work analyses and standard operating procedures, may provide some insights about what has been generated about the work in the past.
- **Training and Educational Program Materials –** Many organizations and post-secondary schools and institutions have extensive set of materials that have been used with previous training and educational programs.
- **Organizational Mission, Vision, and Value Statements –** These documents provide an understanding of the strategic direction of the organization.

Sources of Information

Professional Organizations – Within certain occupations, such as health professions, engineering, and teaching, there are professional organizations that have conducted studies that establish standards for the occupation.

Technical Information from Vendors – In many instances, the purchase of tools, equipment, or software comes with associated user information in the form of technical manuals, reference guidelines, online libraries, among others.

Employment and Wage Reports – Government agencies involved in workforce development often publish trend reports focusing on certain occupations and business sectors.

O*NET – A well-known data-based website https://www.onetonline.org is a free resource managed by the U.S. Department of Labor. The data base contains information about literally thousands of occupations, allowing individuals, organizations, and educational institutions the ability to obtain comprehensive information about the occupations. Originally, developed in 1933 as the *Dictionary of Occupational Titles*, to assist individuals with their job search. Copies of these encyclopedia-sized volumes, updated every five years, could be found in every public library in the U.S. In 2000, the Dictionary of Occupational Titles became a web-based resource, known as O*Net

Research Articles – Many occupations have undergone analyses and the results of these studies have been published in the scholarly literature, especially in journals related to the occupation, such as nursing, engineering, social work, among other journals.

Consulting Firms – Many consulting firms have developed extensive data-bases of organizational competencies, which can be accessed free as a public service or for a fee.

O*NET OnLine

O*NET OnLine

Occupation Quick Search: ning and development manager

Help | Find Occupations | Advanced Search | Crosswalks | Share | O*NET Sites

Build your future with O*NET OnLine.

Welcome to your tool for career exploration and job analysis!

O*NET OnLine has detailed descriptions of the world of work for use by job seekers, workforce development and HR professionals, students, researchers, and more!

What is O*NET?

What's New?

O*NET Database and websites updated

Learn More

Get O*NET news by email or RSS.

I want to be a...

Start the career you've dreamed about, or find one you never imagined.

Find It Now at My Next Move

Occupation Search

Keyword or O*NET-SOC Code:

Find Occupations

Browse groups of similar occupations to explore careers. Choose from industry, field of work, science area, and more.

Bright Outlook

Advanced Search

Focus on occupations that use a specific tool or software. Explore occupations that need your skills.

Browse by O*NET Data:

Crosswalks

Connect to a wealth of O*NET data. Enter a code or title from another classification to find the related O*NET-SOC occupation.

Apprenticeship

ATTN: VETERANS

Put your military skills and experience to work in civilian life. Learn how at:

MY NEXT MOVE FOR VETERANS

Get Started

Hot Technologies are frequently included in employer job postings.

Learn More

Methods of Gathering the Information

Observe Work Behaviors - The most commonly used work analysis method is simple observation. The logic is simple – if you want to know what is done, then watch someone doing it, and document what you see. Observation is a good method to use with behaviors that are mostly observable and have a relatively fixed sequence of behaviors.

Observe Work Samples – A form of observation, this method can be used when continuous observation is not possible and when the work occurs at irregular intervals. Various parts of the work day-week cycle may be selected for sampling. The observer keeps a running log about what is observed. This method is time-consuming and may have internal organization considerations. This method is often used to document work behaviors of managers and professionals.

Conduct Individual Interviews – Asking questions about the work content can be directed to individual job incumbents or others that know about the work. Interviews are almost always structured in nature and often used in combination with observations. Interviews can also be used to identify information for a questionnaire.

Conduct Group Interviews – Mostly structured in nature, but the interviewer raises questions and records the range of responses. Could be done in different ways, such as a focus group setting. Focus groups consist of eight to 12 experts with a leader who initiates the discussion on a specific topic. Focus groups are useful in providing a sense of the issues and comparing attitudes, approaches, and knowledge and skills of stakeholders. Experience as a group facilitator is essential to use this method.

Conduct Critical Incident Interviews - A variation of the interview method, the analyst seeks to identify specific incidents from an individual's experience that describe when the job incumbent was effective or ineffective in performing a set of work. The critical incidents are descriptions of the actual job behaviors. An analysis of the incidents helps identify the underlying factors or task clusters that are critical for job performance. The method has been used to analyze work that involve complex decision-making and have multiple means for achieving the outcomes. The critical incident was originally devised in the 1950s to understand how test pilots responded to emergencies in experimental jet aircraft.

Methods of Gathering the Information

Facilitate Panel Sessions – This method involves facilitating a group of approximately eight to 15 stakeholders who have knowledge of the work. The most prominent example of this method is DACUM, or Developing a Curriculum. This specific method has proven to be an efficient way of gathering job information as the panel is convened over a two to three day period of time. The method requires a skilled person to facilitate the panel. The DACUM method generates much useful information about the job duties, tasks, prerequisite information, among other aspects of a job. The panel sessions occur away from the work setting which may detract from the accuracy of the information.

Review Documents – This entails applying techniques to analyze text information, such as organization websites, internal reports, HR documents, previous job analysis studies, benchmarking studies, research articles, among others. The output of the review might be in the form of a synthesis table, summary notes, outlines, and so on.

Administer Surveys – This method is used to reach many people at a relatively low cost. The major issues with survey are the uncertain accuracy of the results and the low return rates of the respondents. Survey results may be misinterpreted because of the uncertain backgrounds of all respondents. Surveys may be used in combination with other methods, such as observations and a panel session, as a means to verify that the results are accuate.

Facilitator

- Should be content-free in terms of the job
- Should be an expert in the process
- Able to listen actively to all contributions
- Encourage contributions from all SMEs
- Control participants who try to dominate
- Repeat contributions to ensure accuracy
- Probe responses with questions – open ended
- Manage conflicts – allow discussion to be heated
- Maintain open climate

Subject-Matter Experts
(Panel Members)

Considerations when working with SMEs:

A. They may know parts of the work being analyzed, not all.
B. They may have never reflected on what they actually do.
C. They may not know anything about job analysis
D. They may feel defensive when you probe them.
E. They may not have all the information you require.
F. They are part of a data gathering process.
G. They need to be handled with respect and care.
H. They need to know you don't know anything about the work.
I. They need to sense your curiosity about the work?
J. They need to know you will be taking notes or making a recording of what they say and do
K. They need to know you're area of expertise is as analyst "informed knucklehead".

Electric Utility Instructor Task Inventory

	Task Importance						Task Difficulty						Task Frequency					
	How important is the performance of this task in your job as instructor?						How difficult do most instructors find it to learn to perform this task correctly?						How frequently is this task performed by instructors?					
	Important					**insignificant**	**Difficult**					**Easy**	**Frequent**					**Infrequent**
Task Statements																		
Duty A: Developing technical proficiency																		
A001. Perform in-plant assignments	5	4	3	2	1	0	5	4	3	2	1	0	5	4	3	2	1	0
A002. Maintain plant modifications	5	4	3	2	1	0	5	4	3	2	1	0	5	4	3	2	1	0
A003. Participate in vendor training	5	4	3	2	1	0	5	4	3	2	1	0	5	4	3	2	1	0
A004. Participate in company training	5	4	3	2	1	0	5	4	3	2	1	0	5	4	3	2	1	0
Duty B: Developing training materials																		
B001. Specify training objectives	5	4	3	2	1	0	5	4	3	2	1	0	5	4	3	2	1	0
B002. Identify training resources	5	4	3	2	1	0	5	4	3	2	1	0	5	4	3	2	1	0
B003. Develop training modules	5	4	3	2	1	0	5	4	3	2	1	0	5	4	3	2	1	0
B004. Develop performance rating scales	5	4	3	2	1	0	5	4	3	2	1	0	5	4	3	2	1	0

(Continued)

General Information

1. Name of organization: _____

2. Name of plant or site assignment: _____

3. Your current job title: _____

4. Title of the person you report to: _____

5. Highest level of formal education:

_____ a. High school
_____ b. Associate degree
_____ c. Bachelor's degree
_____ d. Master's degree
_____ e. PhD. degree
_____ f. Military school: _____

6. Which of the following best describes your current assignment (check all that apply):

_____ a. Classroom instructor
_____ b. Lab instructor
_____ c. S-OJT trainer
_____ d. Simulator instructor
_____ e. Training designer
_____ f. Other: _____

7. What is the total number of instructors employed by your company? _____

8. How many years have you served as an instructor?

_____ a. With this company
_____ b. With the military
_____ c. With educational institutions
_____ d. Other: _____

9. In what occupations of assignment do you provide instruction? (Check all that apply)

Years		Years	
_____	Chemistry technicians	_____	Reactor operators
_____	Radiation technicians	_____	Supervisors
_____	Electricians	_____	Technical staff
_____	Non-licensed operators	_____	Other: _____

Using Job Analysis Information

- Work Instructions
- Structured on-the-job training (S-OJT) programs
- Classroom training programs
- Performance rating scale – Checklist
- _____

Task Analysis

- The process of documenting the component behaviors of a task
- Task analysis is a separate from DACUM
- Information from a task analysis forms the basis of almost all uses of job analysis

Type of Task	Description	Information to Gather
• Procedure	Perform a series of steps in order.	• Steps in correct order • Quality information for each step • Safety information for each step
• Inspection	Judge the adequacy of key points in an object or process	• Inspection points • Steps to inspect each point • Criteria for each point • Overall criteria
• Troubleshooting	Solve a problem by identifying the indicators, the possible causes, and the actions to address the causes	• Problem indicators • Possible causes • Actions to address the causes
• Adjustment/Revision	Improve something by making necessary changes	• Adjustment point • How to adjust • Effect of the adjustment
• Decision Making	Select which action to take	• Decision conditions • Decision based on the various conditions
• Process Management	Show how work gets done across functions	• Process steps • People involved • Functional areas

Job Analysis Issues – Discussion

- Terminology
- Time required to conduct the analysis
- How to develop internal capacity and systems
- Documenting more complex work
- Selecting tasks for training
- Job analysis versus an occupational analysis
- **Analyzing current versus future job requirements**

Occupation
Has a broader meaning than that of job. An occupation represents similar jobs across different work contexts, such that similar job titles might be found across many different organizations.

Occupational Analysis
Similar to a job analysis, an occupational analysis is the process of documenting the information related to an occupation and relies upon the use of a variety of sources of information and data-gathering methods. Occupational analysis can provide much of the same information as a job analysis, with the addition of the following information:

- Business sector in which the occupation occurs
- Cluster of occupations related to a particular occupation
- Current and future availability of position openings related to the occupation
- Training and educational requirements for entry into the occupation
- Underlying personality characteristics required of individuals
- Potential for career advancement

Ronald L. Jacobs, Ph.D.

Email: rljacobs@Illinois.edu

http://education.illinois.edu/people/rljacobs

http://www.rljacobs-associates.com/about-us.html