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THE PROBLEM:

A critical problem facing
every organization is how
to make managers from
people who are specialists.

1972 NASA Study:
Transformation of Scientists
and Engineers into Managers

Purpose of NASA Study:

1. To determine the principal problems and obstacles faced by specialists during the transition period when they are becoming managers, and

2. To discover ways to avoid or overcome their difficulties.

NASA Study focused on three
dimensions of management:

1. The FUNCTIONS or tasks
   to be performed,

2. The SKILLS and abilities
   needed to perform these
   functions, and

3. The MOTIVES which give
   positive or negative
   meaning to performing
   in a management role.

The Study revealed (not surprisingly) that the transformation is a CONTINUING PROCESS in which TWO fundamental changes take place:

1. More management functions are performed, with greater frequency, and

2. The functions take on a broader scope, requiring the manager to deal with larger numbers of people at higher levels and with a wide range of occupations.

The study revealed that the
greatest problem in the transition
process relates to the organizational system.

The most striking change in SKILLS is the shift from task-centered skills to two categories of skills needed to master the organizational system:

1. Skills in coping with the organizational system itself —— its values, goals, procedures, and policies.

2. Skills in working with people who differ substantially in background and interests.

Three categories of specialists
in terms of patterns of motivations:

1. Motivational pattern is essentially
   that of a manager.

2. Motivational pattern is strongly that
   of a specialist, but discovers the
   motivational patterns and rewards of
   a manager can have positive meaning.

3. Motivational patterns of a manager have
   a definite NEGATIVE appeal —— risk of
   failure is relatively high.

Study findings and recommendations
fell into three categories:

1. MANAGEMENT

2. SELECTION

3. TRAINING

MANAGEMENT:

Agency leadership needs to deal effectively
with the difficulty of the transition process by:

1. Taking an active part in selection procedures
   and training programs, to enhance the potential
   success of specialists moving into management, and

2. Providing a realistic 'dual ladder' system
   to permit grade and salary promotions to
   specialists of high ability who choose
   not to enter management.

SELECTION:
The management selection process needs to:

1. Be aware that the salient motivations of specialists and most managers are substantially different —— those specialists who reject the managerial value system are likely to be poor risks in management positions.

2. Give greater emphasis to criteria other than technical competence or prominence, in selecting candidates for management positions.

3. Consider selection as a continuing process, using ad hoc tasks and task leadership assignments to assess management potential.

TRAINING:
Training programs need to:

1. Orient new employees to the organizational environment, values, and procedures through
   a) central training, and
   b) informal manager—advisors.

2. Be revised to reflect:
   a) greater attention to organizational system skills;
   b) emphasis on developing subordinates;
   c) sensitivity of managers to subordinates; and
   d) use of management evaluation info to assess training needs.

3. Examine the need for special programs to improve performance in the most difficult management functions, through
   a) standard training for all new managers, and
   b) specific skills training for selected managers.

4. Explore the wider use of limited intern—type assignments for new or potential managers, as training and assessment tools.

Six Reasons Why the Transition is Difficult:

1. The specialist must switch prime loyalty from a professional (and technical) orientation to an organization (that is, management) orientation;

2. The specialist wants to be a 'nice guy', but tends to associate management with hurting rather than helping people;

3. The specialist loses DIRECT control over work and now must work through others (neither can he/she be more proficient than subordinates in their respective tasks);

4. She/he spends less time on things that are fun (that is, technical) and must adjust to a scale of values oriented toward management;

5. The Specialist feels trapped at having opted for management to obtain more money, having deserted his/her 'technical birthright'; and

6. In contrast to engineering and physical science, there are few rules in management to fall back on.

TEN MANAGEMENT FUNCTIONS USED IN SURVEY:

1. Budgeting
2. Reporting
3. Staffing
4. Supervising
5. Planning
6. Policy—making
7. Representing the Organization
8. Consulting
9. Program Assessment and Evaluation
10. 'Fire—Fighting'

CARD 1   #1-009

a. Budgeting

-- budget preparation
-- justification of the budget
-- living within budgetary constraints

b. Reporting

-- organizationally upward and down
- to provide information
- to elicit information
- to get action
-- laterally and outside the organization

c. Staffing

-- personnel selections, training and retention

d. Supervising

-- directing work of others
-- personal counseling of subordinates
-- coordinating efforts of those outside your authority

e. Planning

-- long range
-- scheduling and work layout
-- developing scheme to accomplish objective

f. Policy-Making

-- establishing policies and procedures

g. Representing the Organization

-- at higher echelons
-- professional or public meetings
-- liaison with other agencies or groups

h. Consulting

-- assisting other groups or organizations by virtue
of technical or administrative knowledge

i. Program Assessment and Evaluation

-- critically reviewing projects and programs for
ultimate action by a higher authority

j. "Fire-Fighting"

-- meeting unexpected day-to-day problems

FIGURE 1.—Card used in interview, enumerating management functions

FUNCTIONS PERFORMED MORE FREQUENTLY AS A MANAGER:

- Budgeting

- Staffing

- Supervising

- Policy—making

- Representing the Organization

- Program Assessment

TIME CONSUMPTION:

- REPORTING was consistently said to be the most time-consuming management function.

- Supervising, planning, and 'firefighting' were also selected frequently as being time-consuming.

DIFFICULTY OF FUNCTIONS

- Most respondents said they had not found any of the management functions particularly difficult to perform.

- A relatively small proportion of respondents found budgeting, reporting, and staffing particularly difficult.

IMPORTANCE OF FUNCTIONS:

● Planning was viewed as being particularly important for specialists and for managers.

● Reporting and Supervising were viewed as being important for managers, followed by staffing and budgeting.

MOST/LEAST ENJOYABLE FUNCTIONS

- MOST ENJOYABLE:
  - Planning
  - Reporting
  - Supervising
  - Representing the Organization
  - Consulting
  - Program Assessment

- Least Enjoyable:
  - Budgeting (most consistently disliked)
  - Staffing

SIXTEEN MANAGEMENT SKILLS USED IN STUDY:

1. Fundamental Technology
2. Application of Techniques
3. Knowledge in Related Areas
4. Operating within Organizational System
5. Operating within Financial System
6. Operating within Personnel System
7. Recognizing, Coping with Environmental Factors
8. Communication of Ideas,
9. Working with Diverse People
10. Coordinating, etc., Group Effort
11. Leadership Style
12. Generation of Confidence of Superior
13. Integrative Ability
14. Problem—solving
15. Decision—making
16. Creative Thinking

#1-009

CARD 2

a. Fundamental technology
    -- well founded in the fundamentals of his field.

b. Application of techniques
    -- capacity to apply techniques.

c. Knowledge in related areas
    -- professional knowledge in areas related to specialty.

d. Operating within organizational system
    -- capacity to operate within the organization -- a knowledge of
       organizational goals, structure, relationships and procedures.

e. Operating within financial system
    -- capacity to operate within the financial management system --
       knowledge of relevant budgeting, cost estimating, and cost control
       techniques or procedures.

f. Operating with personnel system
    -- capacity to operate within the personnel system -- the formal and
       informal means (and restrictions) applicable to the full range of
       personnel activites from recruitment through separation.

g. Recognizing, coping with environmental factors
    -- capacity to recognize and to cope with environmental factors --
       e.g., constituent-professional-group interests, inter-agency
       problems or relations, interested officials in other component
       organizations within your agency, organizational politics.

h. Communication of ideas
    -- ability to communicate ideas.

i. Working with diverse people
    -- capacity to work with people of diverse ability, style, and
       temperament.

j. Coordinating, etc., group effort
    -- ability to coordinate; facilitating group efforts, negotiating.

k. Leadership style
    -- possessing a leadership style that draws positive responses from
       subordinates.

l. Generation of confidence of superior
    -- capacity to generate the confidence of his superior in him.

m. Integrative ability
    -- integrative ability, to perceive and assess relationships.

n. Problem-solving
    -- capacity to identify and to define critical issues, to develop
       potential solutions.

o. Decision-making
    -- possesses decision-making capacity.

p. Creative thinking
    -- capable of creative thinking.

NOT PARTICULARLY IMPORTANT _____ OF CRITICAL IMPORTANCE
                            1 2 3 4 5 6 7 8 9

FIGURE 2. — Card used in interview, enumerating management skills

MOST IMPORTANT SKILLS

- FOR A SPECIALIST:
  - Fundamental Technology
  - Application of Techniques
  - Communication of Ideas
  - Problem–solving
  - Creative Thinking

- FOR A MANAGER:
  - * Operating within the organizational system
  - * Operating within the financial system
  - * Operating within the personnel system
  - * Recognizing and Coping with Environmental Factors
  - Communication of Ideas
  - * Working with Diverse People
  - * Coordinating Group Effort
  - * Leadership Style
  - Generating Confidence of Superior
  - Integrative Ability
  - Problem–solving
  - Decision–making
  - Creative Thinking

(* Most likely to be a source of difficulty during transition.)

FIFTEEN MOTIVATIONAL CATEGORIES USED IN STUDY:

1. Leadership
2. Detailed Planning
3. Doing New, Different Things
4. Direct Attack on Problems
5. Contributing to Organization's Goals
6. Achieving Through Overcoming Difficult Obstacles
7. Assisting Others
8. Being Independent
9. Seeking the Support of Others
10. Being Recognized
11. Being Able to Exercise Authority
12. Risk—taking in Decisions
13. Associating with Very Congenial Co—workers
14. Associating with Intellectually Competent Co—workers
15. Using Technical Knowledge, Skills

CARD 3   #1-005

a.   Leadership

     -- being the leader - directing others - being the one who establishes
        policies.

b.   Detailed planning

     -- developing detailed plans - being neat and orderly in one's work.

c.   Doing new, different things.

d.   Direct attack on problems

     -- engaging in direct attack on problems and obstacles.

e.   Contributing to organization's goals

     -- contributing to the advancement of the organization's goals.

f.   Achieving through overcoming difficult obstacles.

g.   Help to one's colleagues - assisting others.

h.   Being independent

     -- making own decisions - doing as one wishes.

i.   Seeking the support of others

     -- seeking assistance from others.

j.   Being recognized

     -- for one's accomplishments.

k.   Being able to exercise authority.

l.   Risk-taking in decisions

     -- liking to be in a job where one's decisions involve taking risks.

m.   Associating with very congenial co-workers.

n.   Associating with intellectually competent co-workers.

o.   Using technical knowledge, skills.

LOW SATISFACTION   HIGH SATISFACTION
                  1 2 3 4 5 6 7 8 9

FIGURE 3.—Card used in interview, enumerating motivations

MOTIVATIONS ASSOCIATED WITH BEING:

- **A SPECIALIST:**
  - Liking To Do New and Different Things
  - Making Direct Attack on Problems
  - Being Independent
  - Associating with Intellectually Competent Co-workers
  - Using Technical Knowledge and Skills

- **A MANAGER:**
  - Being a Leader
  - Contributing to Organization's Goals
  - Helping One's Colleagues
  - Seeking the Support of Others
  - Exercising Authority
  - Risk-taking in Decisions

HIGHEST–SATISFACTION–RATED MOTIVATIONS

- **AS A SPECIALIST**
  - Making Direct Attack on Problems
  - Achieving Through Overcoming Difficult Obstacles
  - Being Recognized
  - Associating With Intellectually Competent Co–workers
  - Using Technical Knowledge and Skills

- **AS A MANAGER**
  - Being a Leader
  - Contributing to Organization's Goals
  - Achieving Through Overcoming Difficult Obstacles

CHANGES IN MOTIVATION POTENTIAL
DURING TRANSITION TO MANAGER:

- POTENTIAL for Satisfying Tends To INCREASE:
  + Being a Leader
  + Liking To Do Detailed Planning
  + Contributing To the Organization's Goals
  + Helping One's Colleagues
  + Seeking the Support of Others
  + Exercising Authority
  + Risk-taking in Decision Making

- POTENTIAL for Satisfying Tends To DECREASE:
  − Making Direct Attack on Problems
  − Being Independent
  − Being Recognized for Accomplishments
  − Using Technical Knowledge and Skills

- POTENTIAL for Satisfying Tends To Remain the SAME:
  = Doing New, Different Things
  = Achieving Through Overcoming Difficult Obstacles
  = Associating with Very Congenial Co-workers
  = Associating with Intellectually Competent Co-workers

CHANGES IN MOTIVATION SATISFACTION DURING TRANSITION TO MANAGER:

- **EASIER TO SATISFY:**
  - \+ Being a Leader
  - \+ Contributing to the Organization's Goals
  - \+ Helping One's Colleagues
  - \+ Exercising Authority

- **HARDER TO SATISFY:**
  - − Being Independent
  - − Using Technical Knowledge and Skills

DIGITAL MANAGEMENT EDUCATION

■ **FULL WEEK(S)**   ▲ **PARTIAL WEEK(S)**   ▼ **PARTIAL DAY (HOURS INDICATED)**   ⊡ **CONTINUOUSLY AVAILABLE**

✱	Weeks containing U.S. holidays	»
A	NOTE » B LENGTH »	

		OCT					NOV				DEC				JAN					FEB				MAR			
A	B	3	10	17	24	31	7	14	21	28	5	12	19	26	2	9	16	23	30	6	13	20	27	5	12	19	26

MANAGEMENT SKILLS WORKSHOPS (Cont)

PROJECT MANAGEMENT (Cont)

	B
NY-NJ	2
SR	2
SWR	2
WR	2

SKILLS ASSESSMENT

	B
Maynard Area	3
NER	3
MAR	3
CR	3
NY-NJ	3
SR	3
SWR	3
WR	3

PRESENTATION SKILLS FOR IMPACT

	B
Maynard Area	2
NER	2
MAR	2
CR	2
NY-NJ	2
SR	2
SWR	2
WR	2

FIELD MANAGERS' DEVELOPMENT PROGRAM   PHASE II: SKILLS

	B
Maynard Area	5
NER	5
MAR	5
CR	5
NY-NJ	5
SR	5
SWR	5

MANAGEMENT OF SERVICE OPERATIONS (MOSO)

	B	
Location to be announced	10	*TO BE ANNOUNCED*

MANAGEMENT OF SERVICE STAFF (MOSS) NEW

	B	
Location to be announced	10	*TO BE ANNOUNCED*

MANAGEMENT OF SERVICE STAFF (MOSS) JUNIOR

	B
Location to be announced	10

MANAGEMENT OF SERVICE STAFF (MOSS) SENIOR

	B
Location to be announced	10

ADVANCED SALES MANAGEMENT

	B
Maynard Area	10

SALES STAFF MANAGEMENT SEMINAR

	B
Maynard Area	10

STRATEGIC ACCOUNT MANAGEMENT SEMINAR

	B
Maynard Area	5

SOFTWARE SERVICES FIELD COMPUTER MANAGEMENT

Locations to be announced	*TO BE ANNOUNCED*

COURSE DESCRIPTIONS: For complete course descriptions and prerequisites, call DTN 249-1882 or 617-276-1882.

TO ENROLL: Call your Regional Contact. Greater Maynard Area employees can call DTN 249-1882 for enrollment information.

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DIGITAL MANAGEMENT EDUCATION

■ **FULL WEEK(S)**　　▲ **PARTIAL WEEK(S)**　　▼ **PARTIAL DAY (HOURS INDICATED)**　　☐ **CONTINUOUSLY AVAILABLE**

* Weeks containing U.S. holidays

A NOTE　　B LENGTH

			OCT					NOV				DEC				JAN				FEB				MAR		
								*				*	*														
A	B	3	10	17	24	31	7	14	21	28	5	12	19	26	2	9	16	23	30	6	13	20	27	5	12	19	26

MANAGEMENT SKILLS WORKSHOPS (Cont)

SECRETARY/MANAGER COMMUNICATIONS

	B	OCT 3	10	17	24	31	NOV 7	14	21	28	DEC 5	12	19	26
Maynard Area	1			▲			▲				▲			
NER	1			▲							▲			
MAR	1				▲									
CR	1						▲							
NY-NJ	1				▲									
SR	1					▲								
SWR	1						▲							
WR	1	▲												

MANAGING ACROSS CULTURES

	B	
Maynard Area	3	*TO BE ANNOUNCED*

ENGLISH AS A SECOND LANGUAGE

	B	
Maynard Area	11	*TO BE ANNOUNCED*

SEXUAL HARASSMENT

	B	
Maynard Area	3	▲

CALCULATING HUMAN RESOURCE COSTS & BENEFITS

	B	
Location to be announced	3	*TO BE ANNOUNCED*

FIELD SERVICE UNIT MANAGER

	B	
Bedford	10	■

FIELD SERVICE BRANCH MANAGER

	B	
Bedford	10	■

STORAGE SYSTEMS CROSS-ORGANIZATIONAL MANAGEMENT SEMINAR

	B	
Location to be announced	4	*TO BE ANNOUNCED*

THE COMPUTER AS AN OFFICE MANAGEMENT TOOL

	B	
Maynard Area	5	■

MANAGING DATA TO IMPROVE DECISION MAKING

	B	
Maynard Area	3	▲ ▲

MANAGING CRITICAL INTERFACES

	B	
Location to be announced	3	*TO BE ANNOUNCED*

MANAGING CHANGE

	B	
Maynard Area	2	*TO BE ANNOUNCED*
Merrimack	2	▲

INTRODUCTION TO ENTERPRISE ENGINEERING

	B	
Maynard Area	4	▲ ▲ ▲

SALES UNIT MANAGER—COACHING & COUNSELING

	B	
Location to be announced	3	▲

SALES UNIT MANAGER—TERRITORY/SALES

	B	
Location to be announced	3	*TO BE ANNOUNCED*

PROJECT MANAGEMENT

	B	
Maynard Area	2	▲ ▲ ▲ ▲ ▲
NER	2	▲
MAR	2	▲
CR	2	▲ ▲

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DIGITAL MANAGEMENT EDUCATION

■ FULL WEEK(S)　　▲ PARTIAL WEEK(S)　　▼ PARTIAL DAY (HOURS INDICATED)　　⊡ CONTINUOUSLY AVAILABLE

＊ Weeks containing U.S. holidays　》

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		OCT					NOV				DEC				JAN					FEB				MAR			
A	B	3	10	17	24	31	7	14	21	28	5	12	19	26	2	9	16	23	30	6	13	20	27	5	12	19	26

MANAGEMENT SKILLS WORKSHOPS

MANAGING PERFORMANCE

Region	A	B	3	10	17	24	31	7	14	21	28	5	12	19	26	2	9	16	23	30	6	13	20	27	5	12	19	26
Maynard Area		3	▲		▲			▲		▲		▲																
NER		3							▲																			
MAR		3																										
CR		3	▲								▲			▲														
NY-NJ		3		▲				▲																				
SR		3								▲																		
SWR		3		▲								▲																
WR		3											▲															

COUNSELING SKILLS FOR MANAGERS

Region	A	B	3	10	17	24	31	7	14	21	28	5	12	19	26	2	9	16	23	30	6	13	20	27	5	12	19	26
Maynard Area		3	▲		▲			▲		▲		▲																
NER		3								▲																		
MAR		3		▲																								
CR		3			▲							▲		▲														
NY-NJ		3	▲								▲																	
SR		3		▲																								
SWR		3						▲				▲																
WR		3							▲																			

INTERVIEWING SKILLS

Region	A	B	3	10	17	24	31	7	14	21	28	5	12	19	26	2	9	16	23	30	6	13	20	27	5	12	19	26
Maynard Area		2	▲		▲			▲		▲		▲																
NER		2																										
MAR		2		▲																								
CR		2				▲						▲																
NY-NJ		2	▲								▲																	
SR		2			▲																							
SWR		2					▲						▲															
WR		2								▲																		

COMMUNICATION SKILLS FOR SOLVING BUSINESS PROBLEMS

Region	A	B	3	10	17	24	31	7	14	21	28	5	12	19	26	2	9	16	23	30	6	13	20	27	5	12	19	26
NER		3																										
MAR		3	▲							▲																		
CR		3																										
NY-NJ		3							▲																			
SR		3		▲								▲																
Maynard Area		3		▲	▲			▲	▲			▲		▲														
SWR		3				▲							▲															
WR		3				▲																						

TIME MANAGEMENT: WORKING SMARTER

Region	A	B	3	10	17	24	31	7	14	21	28	5	12	19	26	2	9	16	23	30	6	13	20	27	5	12	19	26
NER		1			▲							▲																
MAR		1				▲																						
CR		1						▲																				
NY-NJ		1				▲																						
SR		1						▲																				
SWR		1								▲																		
WR		1	▲																									
Maynard Area		1			▲			▲				▲																

KEY FINANCIAL CONCEPTS

Region	A	B	3	10	17	24	31	7	14	21	28	5	12	19	26	2	9	16	23	30	6	13	20	27	5	12	19	26
Maynard Area		2	▲				▲				▲																	

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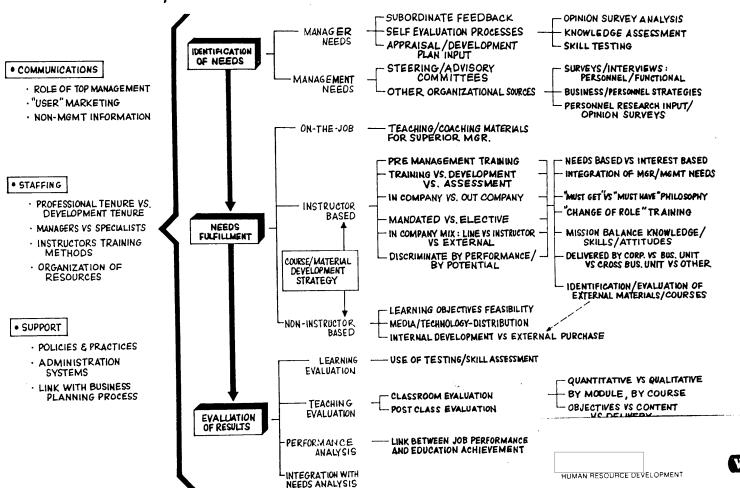
EXECUTIVE/MANAGEMENT DEVELOPMENT: STRATEGY DECISION MAP

• COMMUNICATIONS
- ROLE OF TOP MANAGEMENT
- "USER" MARKETING
- NON-MGMT INFORMATION

• STAFFING
- PROFESSIONAL TENURE VS. DEVELOPMENT TENURE
- MANAGERS VS SPECIALISTS
- INSTRUCTORS TRAINING METHODS
- ORGANIZATION OF RESOURCES

• SUPPORT
- POLICIES & PRACTICES
- ADMINISTRATION SYSTEMS
- LINK WITH BUSINESS PLANNING PROCESS

IDENTIFICATION OF NEEDS

- MANAGER NEEDS
  - SUBORDINATE FEEDBACK
  - SELF EVALUATION PROCESSES
  - APPRAISAL/DEVELOPMENT PLAN INPUT
    - OPINION SURVEY ANALYSIS
    - KNOWLEDGE ASSESSMENT
    - SKILL TESTING

- MANAGEMENT NEEDS
  - STEERING/ADVISORY COMMITTEES
  - OTHER ORGANIZATIONAL SOURCES
    - SURVEYS/INTERVIEWS: PERSONNEL/FUNCTIONAL
    - BUSINESS/PERSONNEL STRATEGIES
    - PERSONNEL RESEARCH INPUT/ OPINION SURVEYS

NEEDS FULFILLMENT

- ON-THE-JOB
  - TEACHING/COACHING MATERIALS FOR SUPERIOR MGR.

- INSTRUCTOR BASED
  - PRE MANAGEMENT TRAINING
  - TRAINING VS. DEVELOPMENT VS. ASSESSMENT
  - IN COMPANY VS. OUT COMPANY
  - MANDATED VS. ELECTIVE
  - IN COMPANY MIX: LINE VS INSTRUCTOR VS EXTERNAL
  - DISCRIMINATE BY PERFORMANCE/ BY POTENTIAL
    - NEEDS BASED VS INTEREST BASED
    - INTEGRATION OF MGR/MGMT NEEDS
    - "MUST GET" VS "MUST HAVE" PHILOSOPHY
    - "CHANGE OF ROLE" TRAINING
    - MISSION BALANCE KNOWLEDGE/ SKILLS/ATTITUDES
    - DELIVERED BY CORP. VS BUS. UNIT VS CROSS BUS. UNIT VS OTHER
    - IDENTIFICATION/EVALUATION OF EXTERNAL MATERIALS/COURSES

COURSE/MATERIAL DEVELOPMENT STRATEGY

- NON-INSTRUCTOR BASED
  - LEARNING OBJECTIVES FEASIBILITY
  - MEDIA/TECHNOLOGY-DISTRIBUTION
  - INTERNAL DEVELOPMENT VS EXTERNAL PURCHASE

EVALUATION OF RESULTS

- LEARNING EVALUATION
  - USE OF TESTING/SKILL ASSESSMENT

- TEACHING EVALUATION
  - CLASSROOM EVALUATION
  - POST CLASS EVALUATION
    - QUANTITATIVE VS QUALITATIVE
    - BY MODULE, BY COURSE
    - OBJECTIVES VS CONTENT VS DELIVERY

- PERFORMANCE ANALYSIS
  - LINK BETWEEN JOB PERFORMANCE AND EDUCATION ACHIEVEMENT

- INTEGRATION WITH NEEDS ANALYSIS

HUMAN RESOURCE DEVELOPMENT

W STAT

The Office Au...