TWI Integration - strategy, deployment and execution in a lean environment

TWI Summit

Orlando Florida June 2008

Brian Heymans

Strategy; Lean; Skills

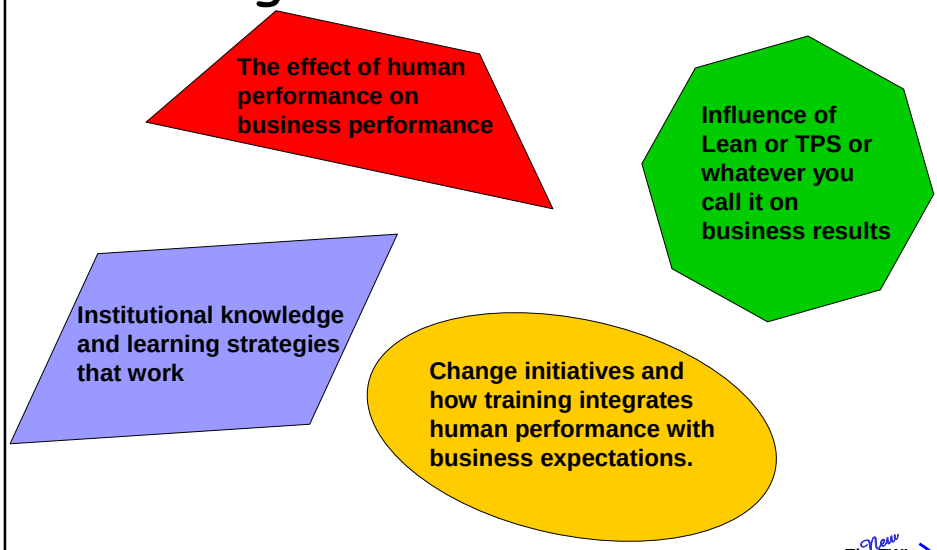
Coming full circle

Adding back Training to support Strategic objectives

and making Lean Initiatives more viable and sustainable.

The challenge of making old ideas more viable with new advances in methods.

Paradigms to deal with



The Challenge

- How do advances in training methods and approaches to learning affect the efficacy of TWI.
- To backward integrate an approach into existing initiatives.
- Will it help improve the effectiveness of strategic objectives

TWI Value

- Simple structure
- Recognizes the need for observed verifiable performance criteria and outcomes
- Recognizes the role of the supervisor
- Recognizes the need for standardization and stability.
- Forces supervisors to engage employees
- Good integration of simple instructional process and dealing with people problems
- Focus also on improvement
- Good in repetitive production environments, easier to deploy
- Easy to learn

Questions about TWI

- New learning methods and effect on TWI
- Complex applications – can it work there?
- Where is TWI not appropriate?
- Where is TWI inherently ineffective or less effective?
- TWI enabling new ways of thinking about people
- Is it easy to backward integrate TWI
- Does it help sustain Lean?
- How effective is it at teaching conceptual skills as opposed to motive skills

Then and now

- The creators of TWI recognized that the methods needed continuous improvement
- What was known in 1945 is limited, later advancements not taken into account in recent resurgence.
- The struggle for competent human resources and the way the competitive environment now forces new approaches to Human Resource development
- Work environments have wider range of challenges than in 1945
  - Technology
  - Process Complexity and Variety
  - Multi-language and cultures
  - Speed of response demands
  - Non manufacturing or service environments

Dutch Trailer manufacturer

- Leading manufacturer of complex multi – use trailers
- Market is mostly Europe
- Most product is make to specific order and has great variability.
- Literally millions of option combinations per trailer.
- High growth in recent years
- Application of lean in factory – improved capacity
- Pre-production environment still learning about lean

The company

- Application is in long cycle time, high variety, large equipment manufacturing factory with complex pre-production preparation environments.
- High growth over past 5 years
- The flexibility of organizations to rapid competitive change determines their success.
- Institutional knowledge is critical and has grown with product range growth

Business challenges

- Skill shortage more profound that initially thought
- Multiple sources of skilled labor throughout Europe
- Multiple languages in most factories in Western Europe
- Common language is English – poor level on shop floor.
- Supervisory skills a limiting factor
- Work complexity high and variable
- Traditional male workforce, results in task imposed labor shortage. Physical skill demands are high.
- Very high labor turnover – cost to productivity not measured
- Low level of training on entry to workplace

Business challenges – pre production

- Data transfer from customer, thru sales, sales support, engineering, purchasing, logistics to production has many flaws
- Wide range of option descriptions although standardized, still allows for misinterpretation
- Data errors and omissions not caught early enough
- Errors start up at various points in the process
- Institutional knowledge about product is variable
- Process of dealing with changes in data AND data problem corrective action are not consistently known.

Business challenges – pre production what they need to know

- The product and its complexities
- Combinations of parts that work and don't work
- How to use data resource tools
- How to deal with data problems
- How to take corrective action through data collection, analysis, and process improvement
- How to collaborate with others cross-functionally.
- How to stop fixing the data, but change the process.

Knowledge Management Challenges

- Institutional Knowledge
  - Product knowledge
  - Product application knowledge
  - Work process knowledge
  - Problem analysis skills
  - Collaborative skills
  - Process improvement skills
  - Going upstream to build prevention.
- Knowing what is the way of working

Knowledge Management Challenges

- Break up knowledge into types
  - Standard information
  - Non standard or low repeatable data
  - Product options
  - Option combinations that work
  - Option combinations that don't work
    - Form for capturing poor combinations
    - Method of communicating with others
    - Method for preventing repetition of poor combinations
- Method of continuous enlightenment

Knowledge Management Challenges

- Methods of gaining Institutional knowledge
  - Training using TWI methods
  - Training using self paced methods
  - Briefing sessions
  - Collaborative team structures
  - Team process work vs individual work
  - Process improvement as a tool to learn the business
  - Accurate recording of events

Knowledge Management Challenges

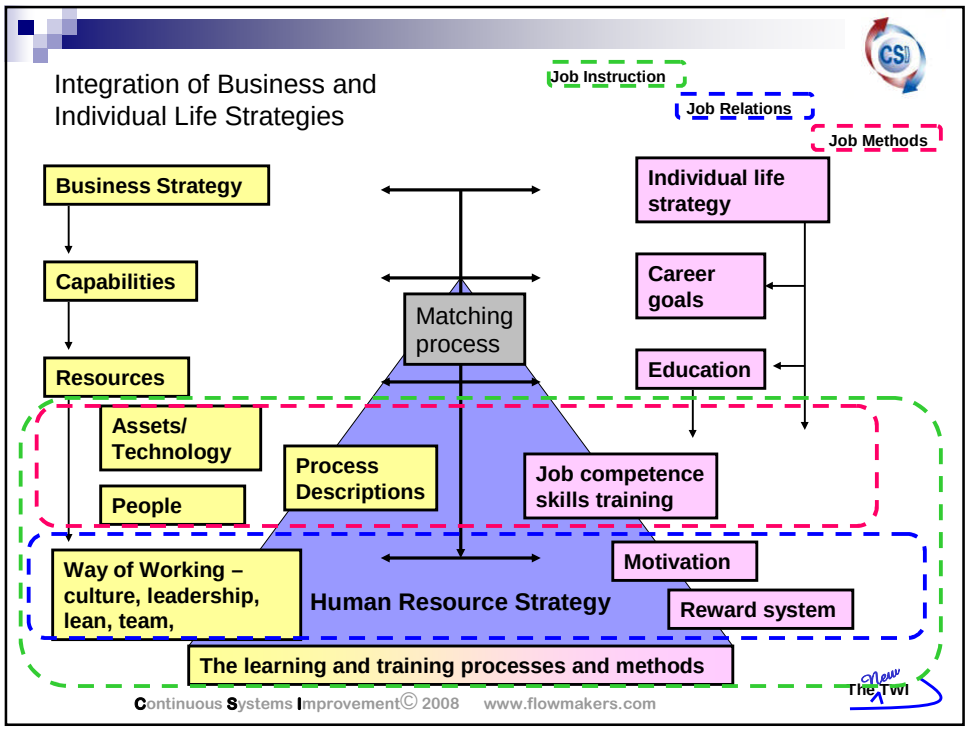
- Process Management elements
  - Data error identification methods
  - Data error management process
    - Data corrective action method
    - Data process improvement methods
- Systems improvement without IT
- Alignment of major core processes

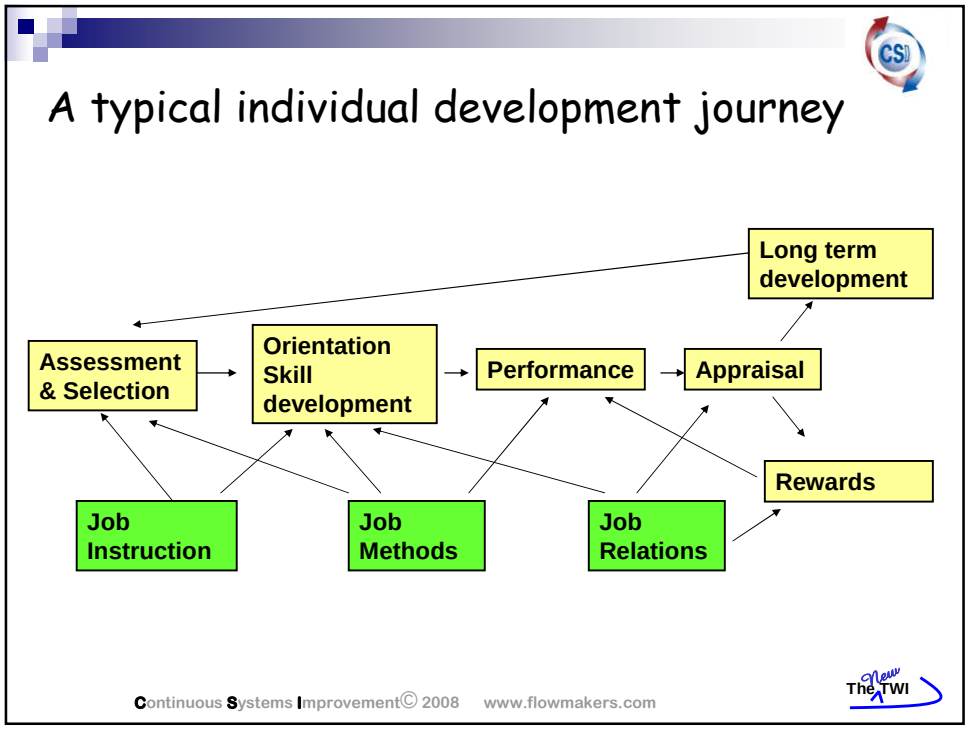
Learning Challenges - Production

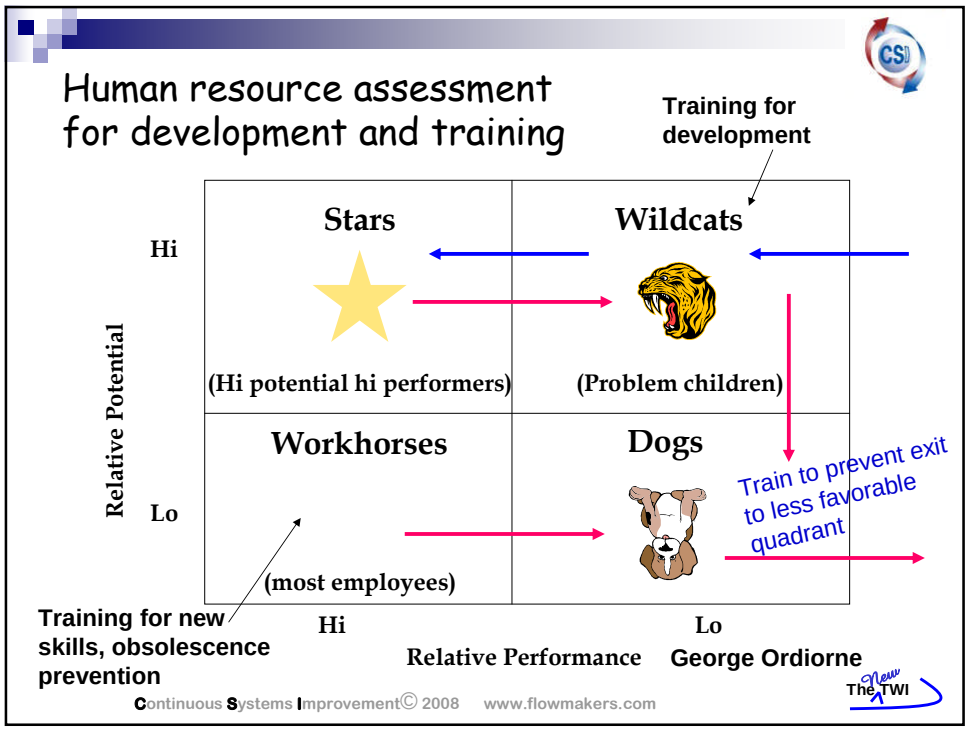
- Product specifications not clear from pre-production
- Data errors and omissions variable and persistent.
- Feedback loop on data corrective action not standardized.
- High labor turnover
- Complex assembly options

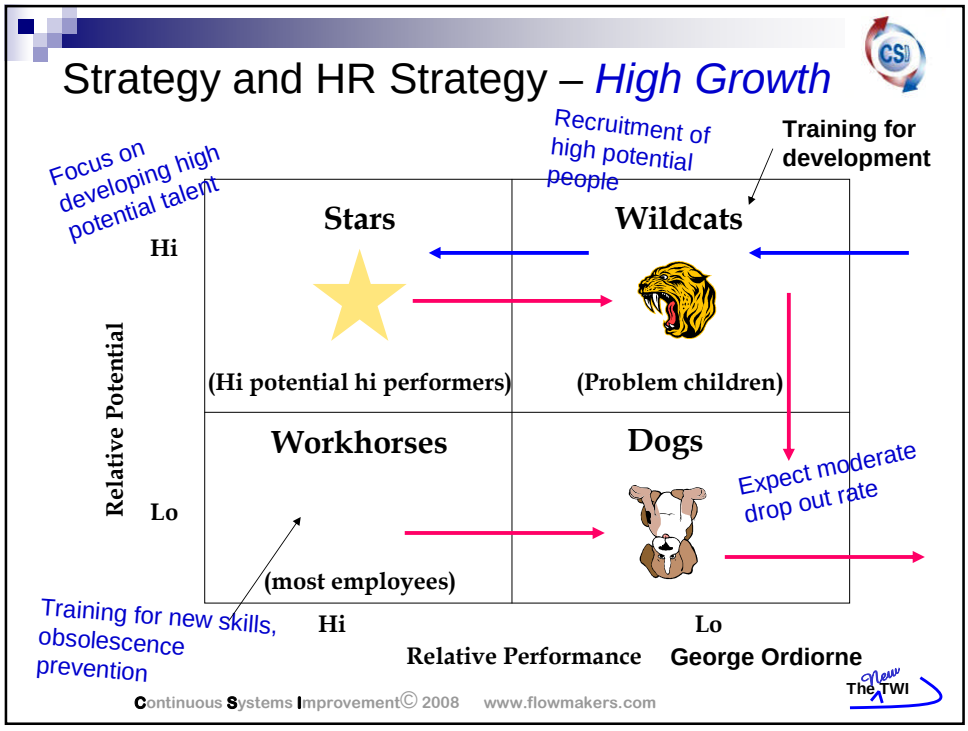
Learning Challenges

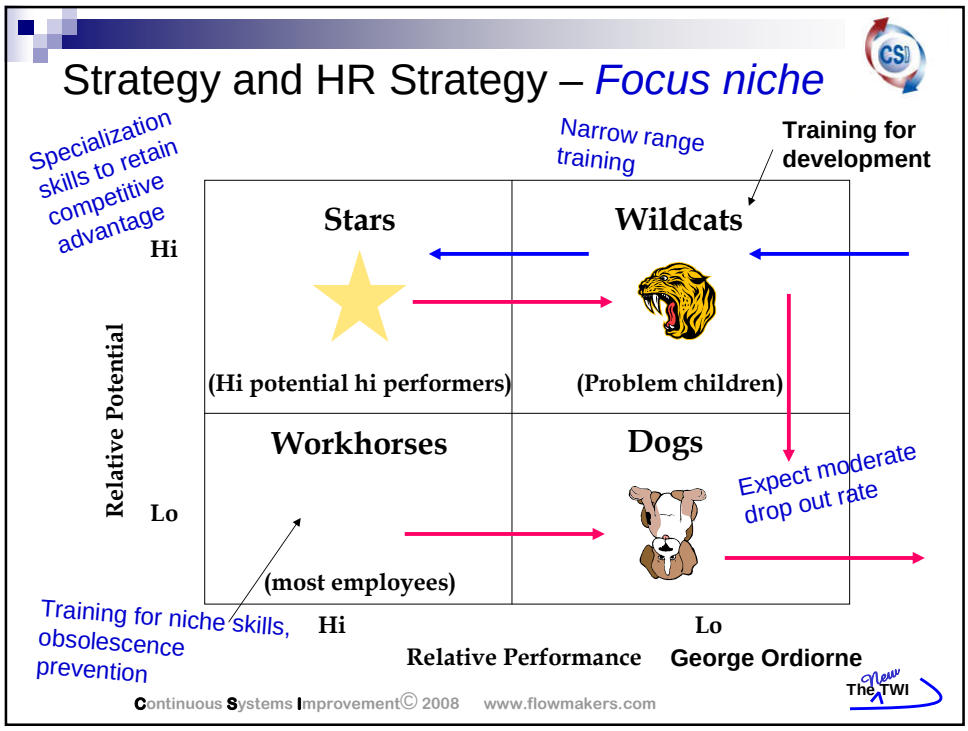
- Product and data management process knowledge too variable.
- Too many new employees
- Much of the institutional knowledge gone
- Learning about vs learning to do.
- Who will train
- How do we know what is being trained is right.

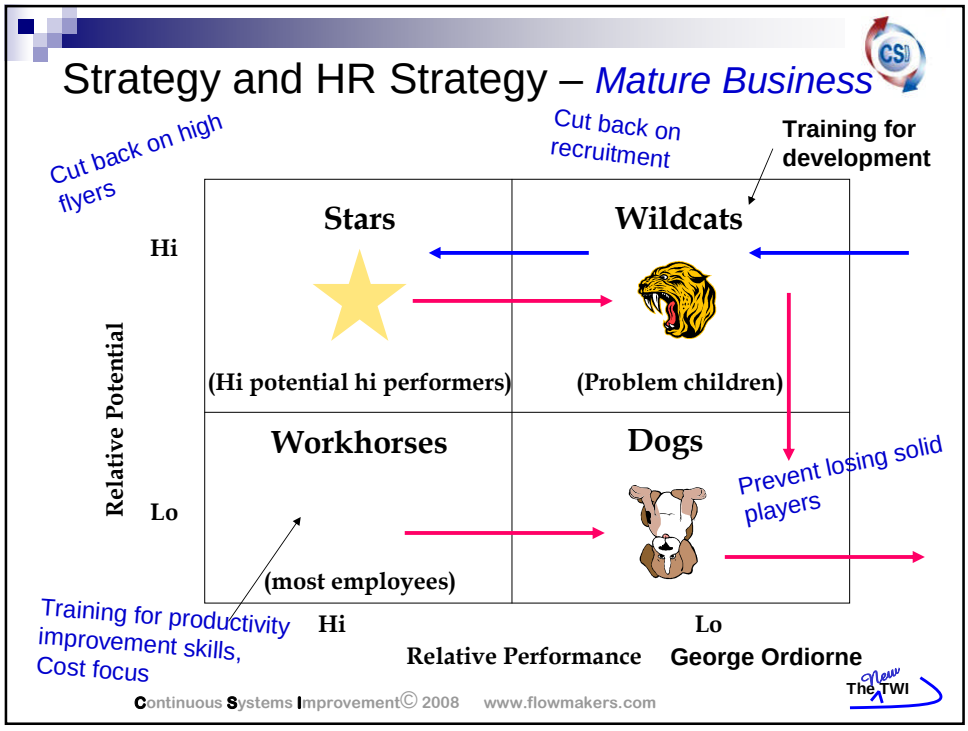

Integration of Business and Individual Life Strategies
Job Instruction
Job Relations
Job Methods
Business Strategy
Capabilities
Resources
Assets/ Technology
People
Way of Working – culture, leadership, lean, team,
Process Descriptions
Matching process
Individual life strategy
Career goals
Education
Job competence skills training
Motivation
Reward system
Human Resource Strategy
The learning and training processes and methods
Continuous Systems Improvement© 2008 www.flowmakers.com
The New TWI


A typical individual development journey
Long term development
Assessment & Selection
Orientation Skill development
Performance
Appraisal
Rewards
Job Instruction
Job Methods
Job Relations
Continuous Systems Improvement© 2008 www.flowmakers.com
The New TWI


Human resource assessment for development and training
Training for development
Stars
Wildcats
Hi
Relative Potential
(Hi potential hi performers)
(Problem children)
Workhorses
Dogs
Train to prevent exit to less favorable quadrant
Lo
(most employees)
Training for new skills, obsolescence prevention
Hi
Lo
Relative Performance
George Ordiorne
Continuous Systems Improvement© 2008 www.flowmakers.com
The New TWI


Strategy and HR Strategy – High Growth
Focus on developing high potential talent
Recruitment of high potential people
Training for development
Stars
Wildcats
Hi
Relative Potential
(Hi potential hi performers)
(Problem children)
Workhorses
Dogs
Expect moderate drop out rate
Lo
(most employees)
Training for new skills, obsolescence prevention
Hi
Lo
Relative Performance
George Ordiorne
Continuous Systems Improvement© 2008 www.flowmakers.com
The New TWI


Strategy and HR Strategy – Focus niche
Specialization skills to retain competitive advantage
Narrow range training
Training for development
Stars
Wildcats
Hi
Relative Potential
(Hi potential hi performers)
(Problem children)
Workhorses
Dogs
Expect moderate drop out rate
Lo
(most employees)
Training for niche skills, obsolescence prevention
Hi
Lo
Relative Performance
George Ordiorne
Continuous Systems Improvement© 2008 www.flowmakers.com
The New TWI


Strategy and HR Strategy – Mature Business
Cut back on high flyers
Cut back on recruitment
Training for development
Stars
Wildcats
Hi
Relative Potential
(Hi potential hi performers)
(Problem children)
Workhorses
Dogs
Prevent losing solid players
Lo
(most employees)
Training for productivity improvement skills, Cost focus
Hi
Lo
Relative Performance
George Ordiorne
Continuous Systems Improvement© 2008 www.flowmakers.com
The New TWI

Structured elements of skills job training

Task or operational skills – *which lever to pull and when*

Process knowledge – *how does the machine change the material*

Operational standards and policy – *SOP's, rules, policies*

Support process knowledge – *logistics and administrative skills*

Wider systems knowledge – *how the rest of the organization works*

Conceptual tasks – *problem solving, idea building, planning, linking, discernment*

Human relationship skills – *working within a collaborative environment, communication, working within a diverse culture, supporting others.*

Data management skills – *measurement, recording data*

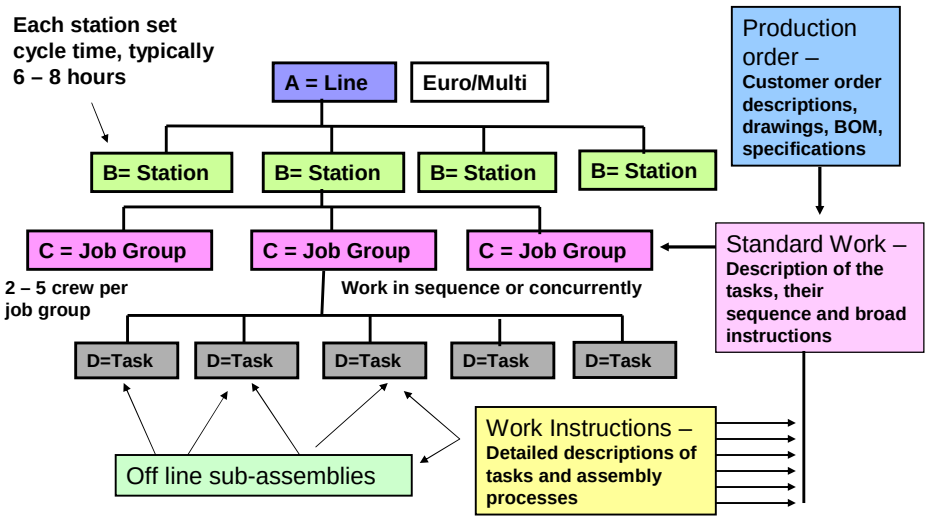
Personal management – *stress management, time management, planning skills*

Company information – *business goals, expectations, policies and rules*

Safety and environmental - *essential knowledge and practice*

Continuous Improvement - 5S JIT, TPM, TQM etc

Job Structure of the production line



Structured elements of skills job training

Task or operational skills	1	D
Process knowledge	1/2	C/D
Operational standards and policy	1/2	B/C/D
Support process knowledge	1/2	A
Wider systems knowledge	1/3	A+
Conceptual tasks	1/2	A+/A-D
Human relationship skills	2	A+/A-D
Data management skills	1/ 3	A+/A-D
Personal management	2	A+
Company information	3	A+
Safety and environmental	2/3	A+/A-D
Continuous Improvement	2	A+/A-D

A+ = Company level
A = Line level
B = Station level
C = Job Group
D = Task level

1 = Job instruction, instructor dependent
2 = Formal training in groups,
3 = Self paced individual learning

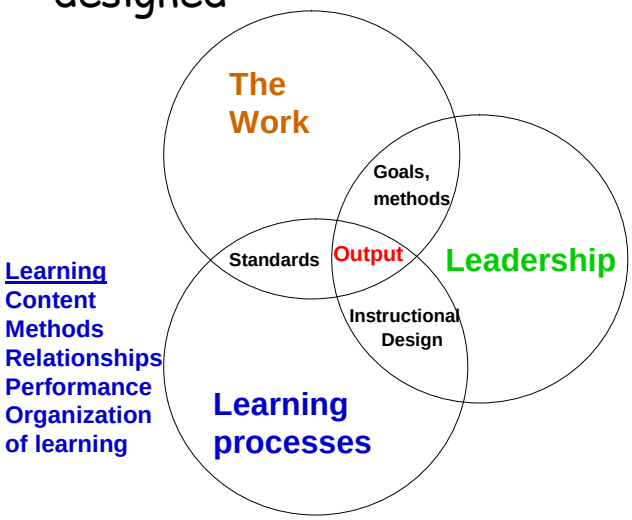
TWI – its limitations – if deployed as designed

- Extremely Instructor dependent
- Instructor data (Job breakdown sheet) not designed for further use – notwithstanding its value as the source of SOP's
- Process steps can be improved
- Original approach to instructor process and support documentation not user friendly

Documentation simplification

- Job breakdown sheet
- Standard Operation Procedure
- Standard work
  - ISO 9001 documentation
- Werk Instructies

TWI – its value– if deployed as designed



The Work

The process
Work methods
Skills requirements
Work standards
Continuous Improvement
Data Management
Measurement

Leadership

Teach/train/coach
Set goals/targets
Manage standards
Invoke change
Resolve problems
Evaluate resources
Communicate
Data Management

Learning

Content
Methods
Relationships
Performance
Organization
of learning

TWI –migration of methods

JI – basic job description	→	Standards ISO 9001 Standardization
JI – basic instruction steps	→	Criterion Reference Instruction Programmed Instruction Self directed learning
JR – basic problem solving steps	→	5 why's Ishikawa diagram Kepner Tregoe 8D
JR – human interaction steps	→	Behavior modeling Behavior analysis
JM – basic improvement steps	→	Process improvement Project management Kaizen

Framework for a New TWI Approach

Managing the Wider Organization	**Successful Communication Strategies**	**Training others in systems use**	**Vertical and lateral management**	**Managing Cross Functional Relationships**
Managing Support Resources	**Building Data Management**	**Integrating Support Services**	**Learning the business**	**Lean in Support functions**
Managing Continuous Improvement	**Change methods**	**Advanced training and coaching**	**Managing Individual & Team Performance**	**Standardization Continuous Improvement**
Managing the Core Process **Stages 3, 4 & 5**	***Training Trainers, Coaches, Mentors*** **Job Instruction**		**Job Methods**	**Job Relations**
Managing the Initiative **Stages 1 & 2**	**Building Organizational Commitment**	**Managing links with other initiatives**	**Managing the training organization**	**Training Coaches and mentors to support Supervisors**
Core Principles	**Core Learning and Implementation Principles** **Focus on the Supervisor as core training resource**			

Continuous Systems Improvement© 2008 www.flowmakers.com

Platform Structures

……Managing the Initiative

- This is about getting the initiative going, integrating it with Lean or whatever.
- Preparing the organization, conditioning the environment.
- Covering core practices to make TWI successful
  - Total Systems
  - Focus on Process
  - Listen to Employees
  - Build Self Esteem
  - Speak with Data
- This is new and essential to integrate with other existing company initiatives

Learning Design Common Principles

- Module structure 4 Steps in everything
- Training of Facilitators – 4 step plan
- Broaden learner directed approaches beyond instructor dependency
- Professional presentation of learning materials
- Covering core principles to make TWI successful
  - Total Systems
  - Focus on Process
  - Listen to Employees
  - Build Self Esteem
  - Speak with Data

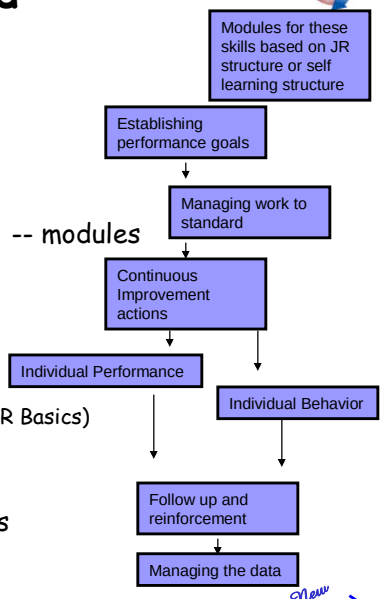
Managing the Core Process

- Instructing employees in basic job tasks and methods (JI)
- This covers the core leadership skills of improving job methods (JM)
- Building sound relationships and problem solving skills beyond personal problems (JR)
- The target audience is the employee or worker, with the supervisor being trained as a facilitator/trainer
- These remain the core building blocks

The New TWI

Job Relations Core and platform elements

- Base elements managing individuals
  - Scientific method – PDCA
  - Set objectives – dealing with people problems
  - Foundations of dealing with people
  - Learning to prevent HR problems
- Advanced People Management Elements -- modules
  - Setting performance goals
    - Production targets
    - Improvement targets
  - Ensuring maintenance of standards
  - Ensuring continuous improvement
  - Dealing with a performance deviation
  - Dealing with an individual behavior problem (JR Basics)
  - Follow up with people on all the above
  - Taking Disciplinary action
  - Reinforcing positive behavior
- Managing all data management processes



The New TWI

Managing Support Resources

- Enable a manager/supervisor to cover basic organizational skills that are essential for his own organization to survive.
- These would be modules with another broad "J" program we call JSR
- Providing skills for supervisors to manage wider functional responsibilities
- The facilitator or trainer would be middle management.

Managing the Wider Organization

- This would be the final cluster of "J" modules under the general heading of JM (Job Management)
- Senior managers would be the trainers of middle managers and supervisors who would in turn be the JSR participants.
- Content would include
  - Setting goals - hoshin
  - Managing change
  - Managing customer requirements
  - Managing organizational relationships
  - Developing systems

Learning Design Facilitator development

- Basic Learning framework and layers
  - **Learn the content** -- **be a participant**
  - **Learn the learning and facilitating process** -- **observe and note the process**
  - **Learn the presentation skills** -- **learn and practice**
  - **Learn the facilitation of learning skills** -- **learn and practice**
- Behavior Analysis basis of Facilitator development
- Continuous observation until skilled

Training technology sources

- Base TWI Modules all off JI, JM, JR base, -- instructor dependent
- Base work skills TWI -- Instructor dependent
- Platform work skills modules TWI and CRI -- self paced learning methods
- Platform employee orientation knowledge TWI/CRI -- Self administered learning method
- Platform Business Knowledge -- TWI/CRI -- Self administered learning method
- Platform Employee performance management skills for supervisors
  - behavior modeling behavior frames
  - Instructor dependent leadership training
- Facilitator Training
  - Presentation skills – instructor dependent facilitator training
  - Facilitation skills and team leading skills -- behavior analysis