Knowledge Management in Medical Education

H. Thomas Aretz, MD
Harvard Medical International

Outline

- **Why knowledge management**
- **What is knowledge and what kinds of knowledge are there**
- **How to manage knowledge**
- **Quality management vs. knowledge management**
- **Organizational structure**
- **Changing the organization**
- **Planning for the future**

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Some questions for you

- Where would you find the names, emails and phone numbers of all the faculty members that teach physical diagnosis in your school? How long would it take you to find them?
- Where would you find all the lecture notes, slides and teaching materials used by the teachers of anatomy in your school? How long would it take to find them?
- You have been asked to develop a course. Where would you find tips and guidelines on how to do so?

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Some reasons for knowledge management

- The vast increase in knowledge created each day and the rate at which it is created;
- The emergence of knowledge not only as an asset to an individual, which is a necessary quality of professionals allowing them to do their job, but also as an absolutely necessary asset or 'capital' of modern organizations competing in the 'knowledge economy';
- The increasingly dispersed environment, in which modern companies and educational institutions (e.g. clinical education at FSU) work, whether on a local, regional, national, international or global scale.

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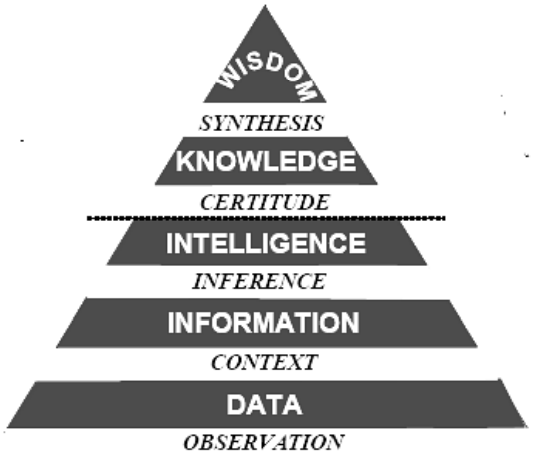
What is knowledge – Haeckel's hierarchy



Adapted from Haeckel, SH. The development and application of organizational knowledge. ABI White Paper. IBM Advanced Business Institute. January 30, 1997

What is organizational knowledge?

In the organizational context, Sallis and Jones have defined knowledge as

…a key organizational asset that creates and adds value to the organization's products and services. It is composed of those insights and understanding that give meaning to the information and data at the organization's disposal. Knowledge originates in the minds of knowing subjects, who evaluate and interpret it in light of the framework provided by their experiences, values, culture and learning. In the organizational context, knowledge takes a range of explicit forms and formats, including processes, procedures and documents, as well as many tacit forms, including values, beliefs, emotions, judgments, and prejudices. If properly applied, all forms of knowledge can provide the driving force for action.

Adopted from: Sallis E, Jones G. Knowledge Management in Education. Enhancing Learning & Education. Kogan Page, London; 2002

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What is organizational knowledge?

- It needs to be **applied to what the organization does or produces**
- It is more than information and data, and therefore **distinct from information and data management**
- It needs to be seen in a **defined context**
- It needs to be **translated into action**
- It takes **multiple forms and exists at various levels** of human and organizational behavior.

Adopted from: Sallis E, Jones G. Knowledge Management in Education. Enhancing Learning & Education. Kogan Page, London; 2002

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Types of knowledge – formal vs. informal

Formal

the way an organization **intends** to work and the resources it uses

- Present in official documents
- Stored, filed and catalogued

Informal

how the organization **really** works

- Folklore of the organization
- Transmitted by word of mouth
- More believed than formal knowledge by employees

Both forms of knowledge need to be exploited for organizations to be successful

Adopted from: Sallis E, Jones G. Knowledge Management in Education. Enhancing Learning & Education. Kogan Page, London; 2002

Types of knowledge – explicit vs. tacit

Explicit (knowing **that)**

- objective and formal
- tangible
- easily captured and codified
- consciously accessible
- easily transmitted through technology

Tacit (knowing **how)**

- socially constructed
- often in people's heads
- not easily captured or codified
- difficult to communicate and share
- contains hunches, values, insights, feelings, images, beliefs
- folklore of the organization
- valuable and rich resource of experience and learning

Both are valuable but need to be converted into each other

Adopted from: Sallis E, Jones G. Knowledge Management in Education. Enhancing Learning & Education. Kogan Page, London; 2002

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Why an organization needs to manage knowledge

- It needs to know what it knows (and also what it does not know)
- It needs to assess what it knows (audit)
- It needs to measure what it knows (account for)
- It needs to apply what it knows (technology and organization)
- It may need to exploit what it knows (implications for the future)

Adopted from: Sallis E, Jones G. Knowledge Management in Education. Enhancing Learning & Education. Kogan Page, London; 2002

How an organization might classify its knowledge

- Is it accessible?
- Who contributes to or creates it?
- What is its half-life?
- Does it aid decision making?
- Does it reside in specific persons?
- Is the organization learning from it?
- How widely applicable is it?
- Is it saleable or useful to the outside world?
- Does the organization know how to use it best?
- How reliable is it?

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A quick organizational knowledge survey

	Agree strongly				Disagree strongly
	1	2	3	4	5
I have easy access to it					
I know who the persons are that create it					
I now how current it is					
It helps me make decisions					
I know exactly to whom to go to get it					
My colleagues and I use it all the time to learn					
I can use it for many things					
Outsiders ask us for it all the time					
My colleagues and I know exactly how to use it best					
It is totally reliable					

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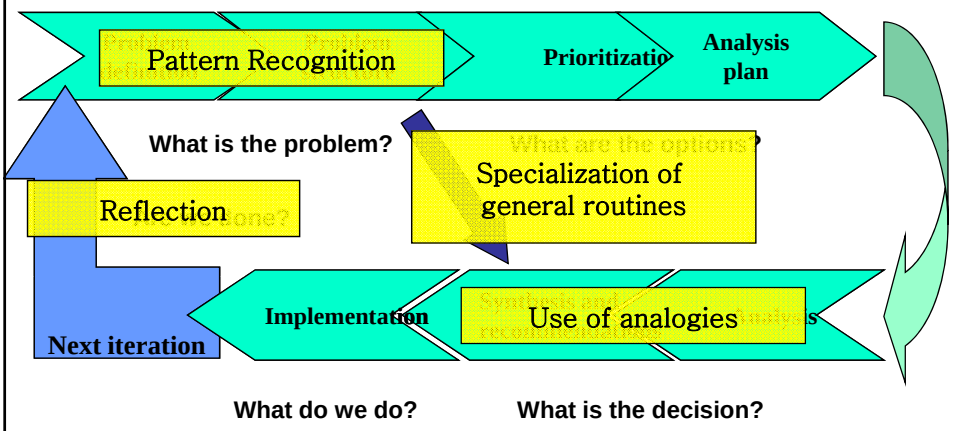
Knowledgeable vs. ignorant organizations

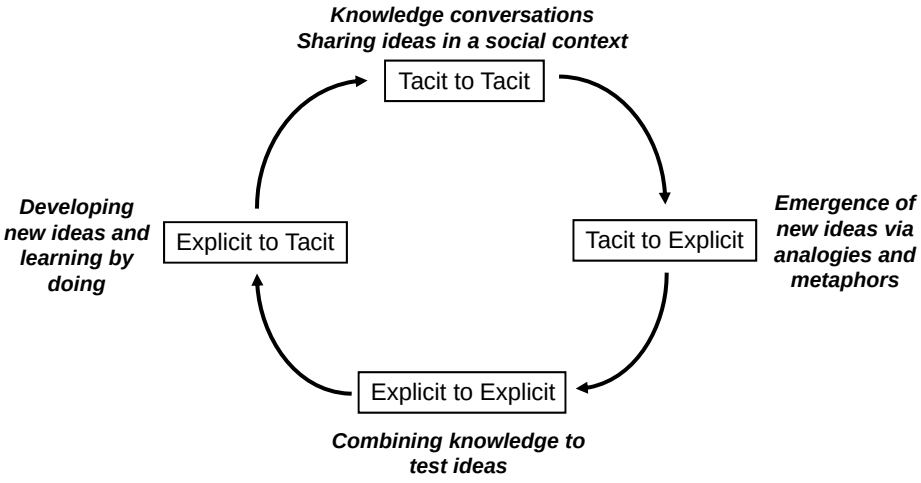
Knowledgeable organization	**Is aware of what it knows**	**Is aware of what it does not know**
Ignorant organization	**Does not know what it knows**	**Does not know what it does not know**

How individuals become experts



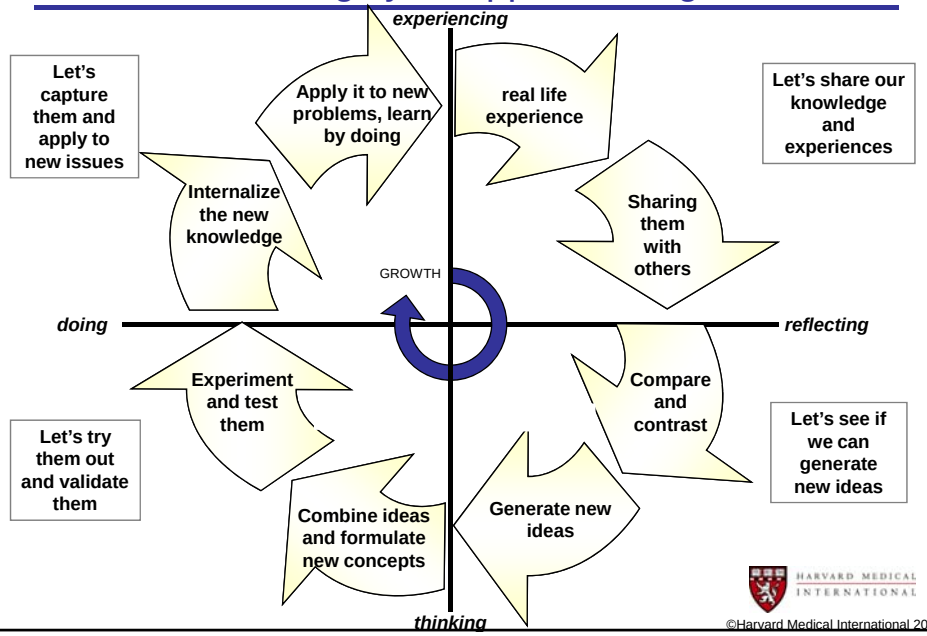
Regehr G, Norman GR. Issues in cognitive psychology: implications for professional education. Acad Med 1996;71:988–1001

The organizational learning spiral

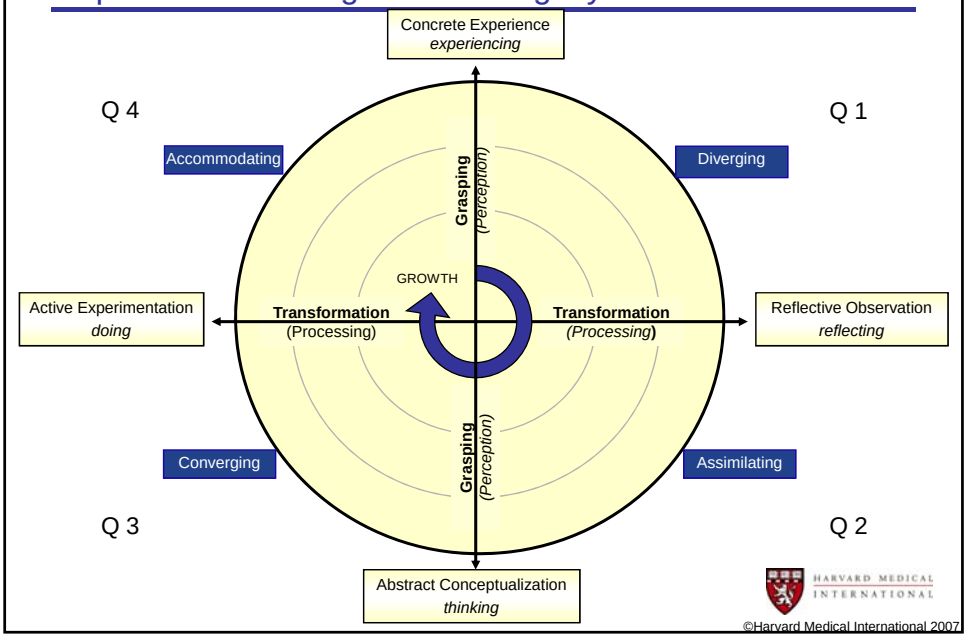


Adopted from: Sallis E, Jones G. Knowledge Management in Education. Enhancing Learning & Education. Kogan Page, London; 2002

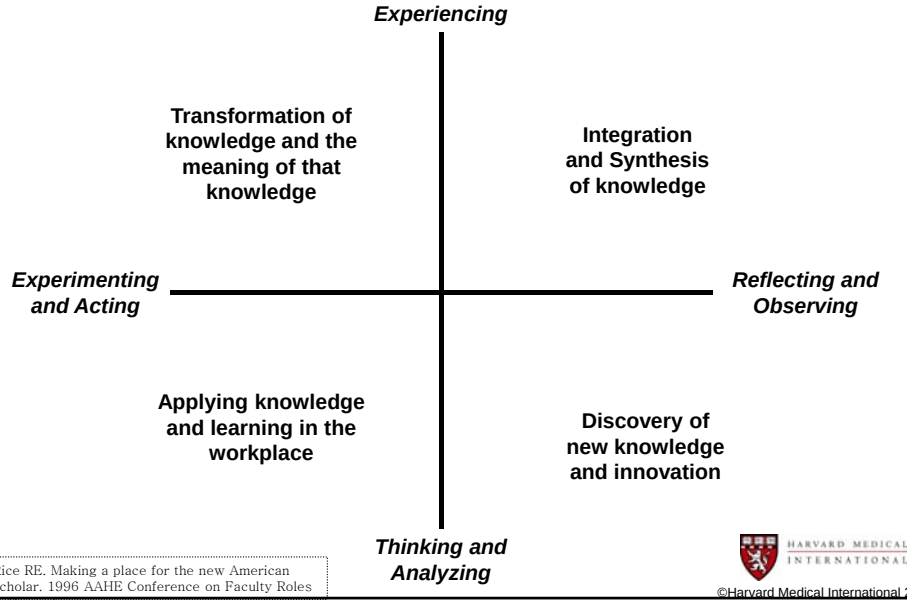
The Kolb learning cycle applied to organizations



Structural dimensions underlying the process of experiential learning and learning styles



Scholarship and the various forms of knowledge (Boyer)



Rice RE. Making a place for the new American scholar. 1996 AAHE Conference on Faculty Roles

Learning conversations

- Help members of organizations reflect on their practice
- Promote sharing of experiences and ideas
- Help to overcome fear of change
- Expand organizational memory
- Are effective means of corporate learning
- Require an action plan to achieve the next step
- Promote teamwork and the creation of communities of practice

Adopted from: Sallis E, Jones G. Knowledge Management in Education. Enhancing Learning & Education. Kogan Page, London; 2002

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Knowledge communities

- Self-organized
- Learning communities
- Built around a common purpose and are not permanent
- Cross traditional functions and structures
- Share and make explicit tacit knowledge
- Can be supported by nurturing management and leadership styles

Adopted from: Sallis E, Jones G. Knowledge Management in Education. Enhancing Learning & Education. Kogan Page, London; 2002

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Example Xerox

Example - nursing

Error Needs management involvement to avoid

"An error is the execution of a task that is either unnecessary or incorrectly carried out and that could have been avoided with appropriate distribution of pre-existing information"

Problem Can be solved by workers

"A problem is the disruption of a worker's ability to execute a prescribed task because either: something the worker needs is unavailable in the time location, condition, or quantity desired, and hence, the task cannot be executed as planned; or something is present that should not be, interfering with the designated task."

Tucker, Edmondson. California Management Review, Winter 2003;45(2)

Example - nursing

Study of nurses in 9 hospitals of various sizes, levels and complexity observing nurses for a total of 240 hours. They found a total of 194 incidents.

Problems	166	Errors	28
Missing or incorrect information Missing or broken equipment Waiting for a resource Missing or incorrect supplies Simultaneous demands on time		By the nurse	39%
		By other people	18%
		Unnecessary actions due to faulty process	43%

Tucker, Edmondson. California Management Review, Winter 2003;45(2)

Example - nursing

Approaches to problem-solving

- First-order problem-solving
  - Two rules of thumb:

    1. Whenever you encounter a problem, do what it takes to continue patient care task – no more and no less
    2. Ask for help from people that are socially closer rather than those that can correct the problem

- Second-order problem-solving
  - Not only solves immediate problem, but also addresses underlying causes:

    1. Communicate to responsible party
    2. Bring to manager's attention
    3. Share ideas on cause and remedy
    4. Implement changes
    5. Verify that things are done

Tucker, Edmondson. California Management Review, Winter 2003;45(2)

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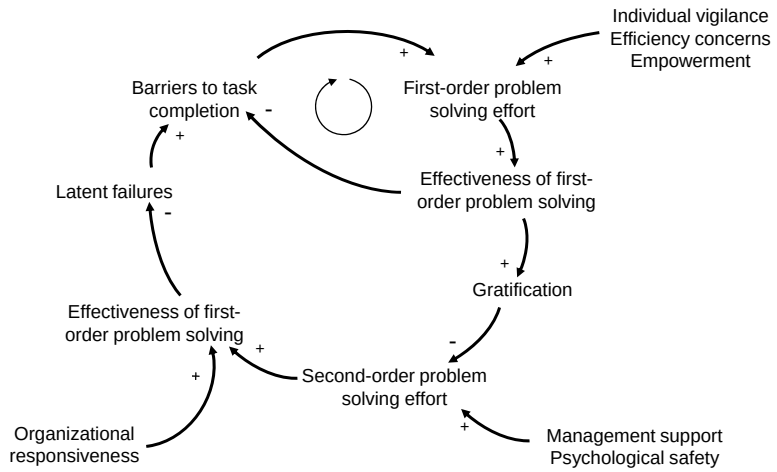
Example - nursing

How positive human resource attributes can prevent learning

- Emphasis on individual vigilance leads to individual problem solving without involvement of management
- Emphasis on individual unit efficiency leads to similar results on the unit level
- Empowerment leads to the disenfranchisement of management and organizational elements best suited to prevent problems in the future.

Tucker, Edmondson. California Management Review, Winter 2003;45(2)

Example - nursing



Tucker, Edmondson. California Management Review, Winter 2003;45(2)

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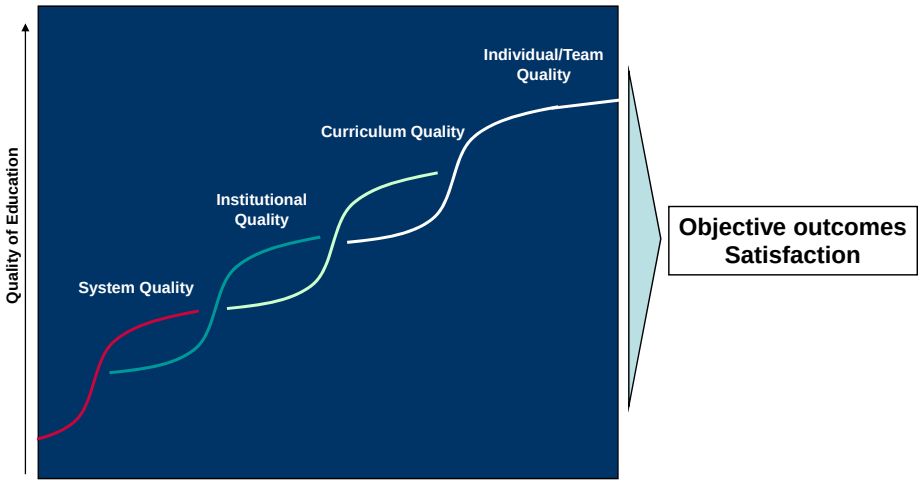
Quality continuum: From system to individual



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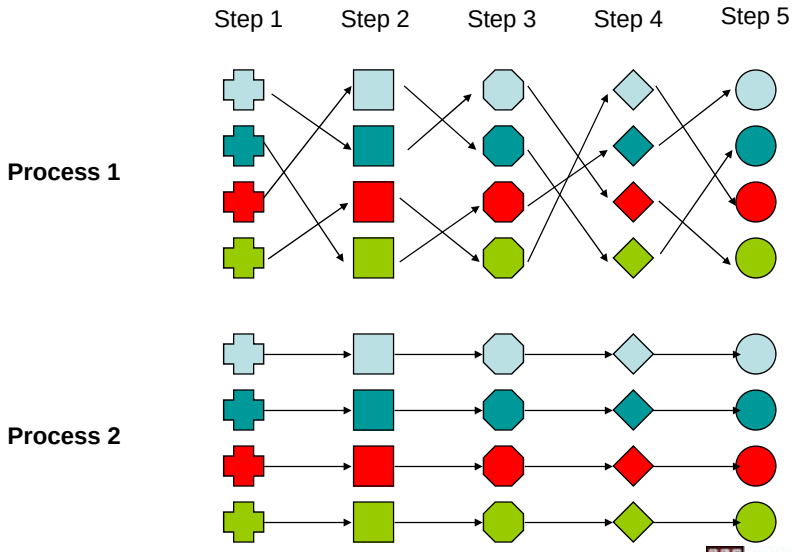
Two systems of production and their quality management



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Underlying assumptions for process 1 applied to education

- No best outcome for students in this field, only for this student
- Professionals are the same
- The professional crafts a unique educational strategy for each student
- Path has no relation to outcome
- Quality = perceived value

adapted from Bohmer, R. HBS 2003

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Underlying assumptions for process 2 applied to education

- Intended outcome for each student is the same
- Professionals are different
- Education comprises an orderly sequence of relatively unvarying tasks and decisions
- Optimal pathway is definable
- Quality = meeting expectations

adapted from Bohmer, R. HBS 2003

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QM in educational planning and operations

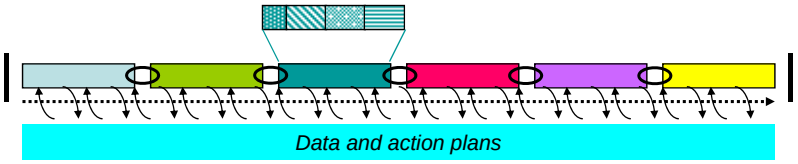
Define the outcomes that need to be achieved by the system

Define the pathway (curriculum) that will achieve those outcomes

Define the hand-overs (levels and expectations)

Define the details of the individual activities (detailed course planning)

Define how the system and its elements will be improved (evaluation)



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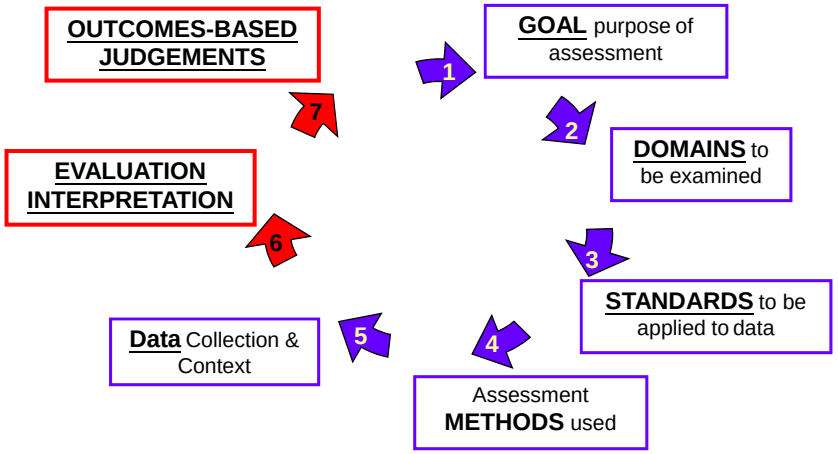
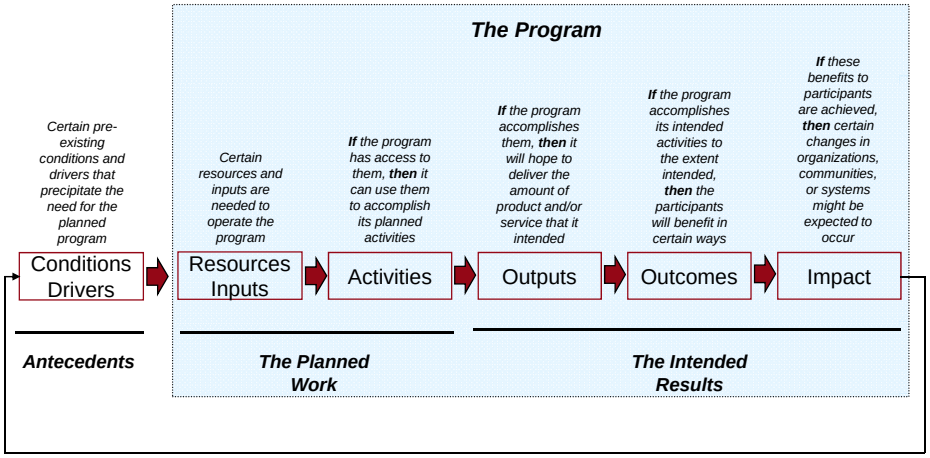
Process: Assessment & Evaluation



The managed educational process

- ***Process control:***
  - specify educational process
    - guidelines, protocols and curricula
  - process measurement
    - intermediate outcome measures
  - benchmark process performance
    - practitioner profiling
  - variance analysis
    - practice review
- ***Knowledge as input***

The outcomes logic model of program planning



Adapted from:www.wkkf.org/Pubs/Tools/Evaluation/Pub3669.pdf

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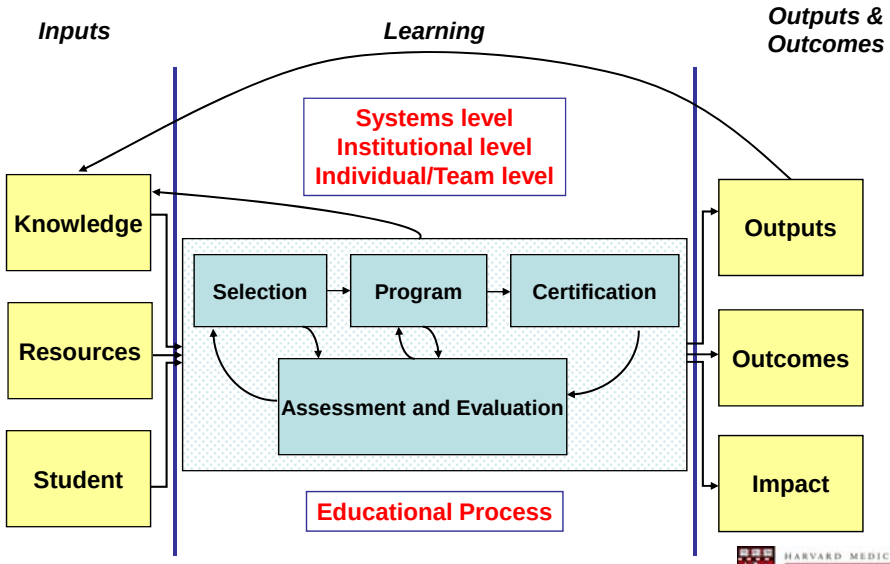
The educational process **in** schools vs. the educational process **of** schools



adapted from Bohmer, R. HBS 2003

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Information and knowledge as outcome – education as a process of learning

- about the student
  - the knowledge of the student
  - the educational success of the student
  - value to the student
- about the curriculum
  - for these types of students
  - about the curriculum independent of the student
- about the education team and organization
  - its capabilities
  - its processes (teamwork)

adapted from Bohmer, R. HBS 2003

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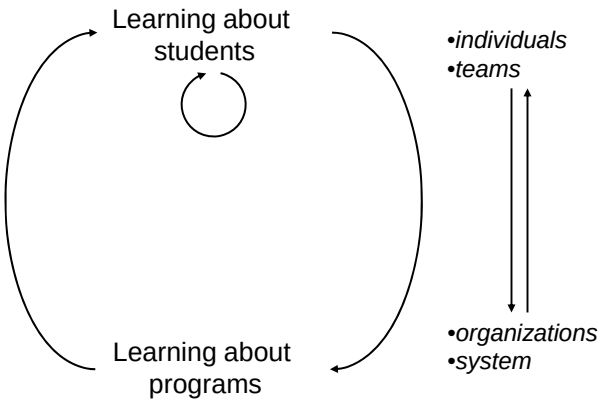
Quality in education requires learning at multiple levels



adapted from Bohmer, R. HBS 2003

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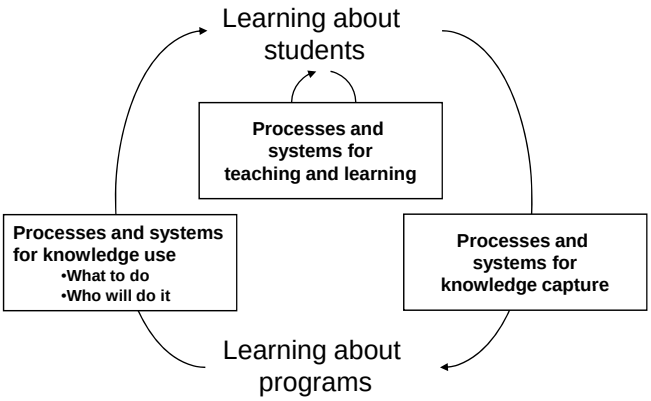
Managing learning



adapted from Bohmer, R. HBS 2003

"Ignorance more frequently begets confidence than does knowledge"

C. Darwin (1871)

Stages of knowledge

Stage	Name	Description
1	Ignorance	The phenomenon is not recognized or the variable's effects seem random
2	Awareness	Know variable is influential but can neither control nor measure it
3	Measure	Can measure the variable but cannot control it
4	Control of the mean	Control of the variable is possible but not precise and control of variance around the mean is not possible
5	Process capability	Can control the variable across its whole range
6	Process characterization	Know how small changes in the variable will affect results
7	Know why	Fully characterized scientific model of cause and effect
8	Complete knowledge	Knowledge of all interactions such that problems can be prevented by feed forward control

Bohn, R., Jaikumar, R. HBS Working Paper, 1992

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Example Xerox

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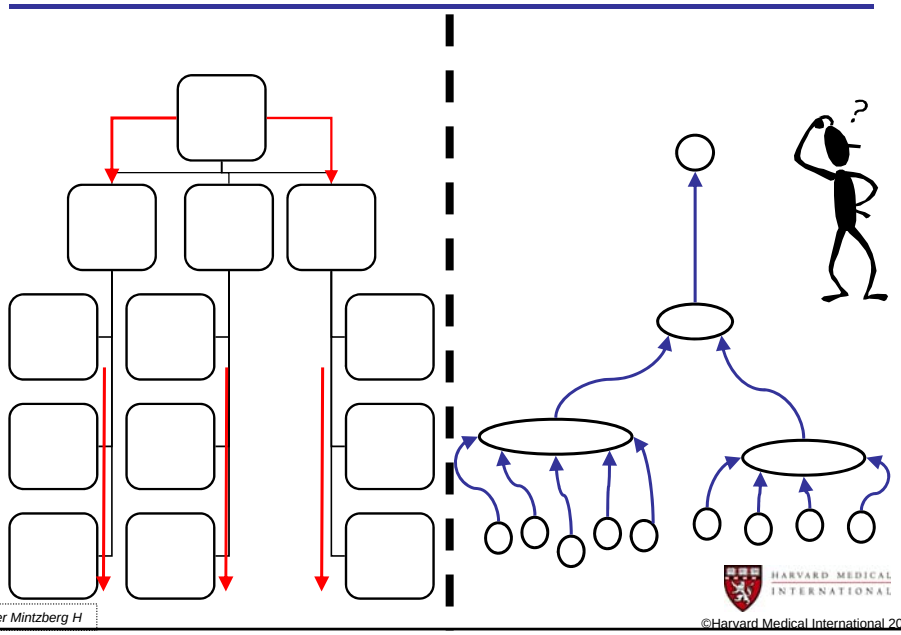
Process vs. practice – balancing act

Process	*Practice*
The way tasks are organized	The way things are done
Routine	Spontaneous
Orchestrated	Improvised
Assumes a predictable environment	Responds to a changing, unpredictable environment
Relies on explicit knowledge	Driven by tacit knowledge
Linear	Web-like
Top-down	Bottom-up
Efficiency	Effectiveness

adapted from Brown JS, Duguid P. HBR 2000

The process – practice divide



After Mintzberg H

Organizational learning must be managed

**Individuals learn naturally,
teams and organizations do not**

Individual learning	Organizational and team learning
Risk is private	Risk is public
Knowledge is separable	Knowledge is integral
Data collection and analysis automatically integrated	Processes are required for reflection and integration
Typically rapid, requiring few experiences	Often slow, requiring many experiences

Organizational learning must be managed

adapted from Bohmer, R. HBS 2003

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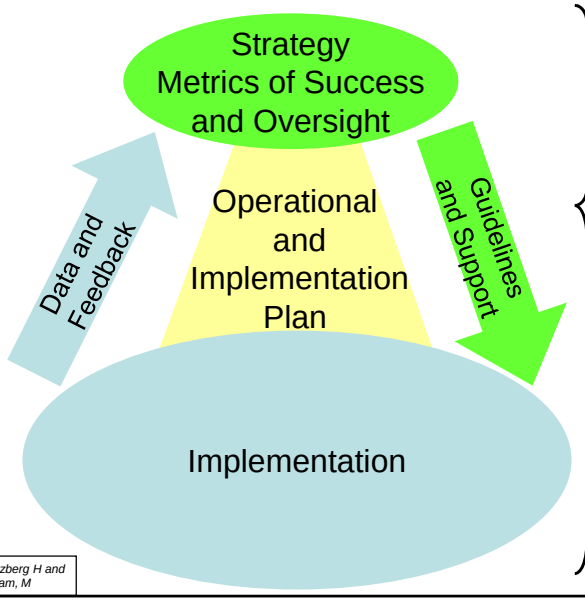
Organizational governance – working towards sustainability and improvement



Consensus
"Defining what's common"

Implementation and management
"Being specific"

After Mintzberg H and Buckingham, M

Mintzberg's Taxonomy of Organizational Forms

Organizational structure is largely determined through the degree of variety in its environment, where

Environmental Variety ≅ Complexity **x** Pace of Change

Mintzberg H Structures in Fives

Four combinations of complexity and change

	SIMPLE	COMPLEX
STABLE	MACHINE BUREAUCRACY (Standardized work processes and outputs)	PROFESSIONAL ORGANIZATION (Standardized skills and norms)
DYNAMIC	ENTREPRENEURIAL STARTUP (Direct supervision)	ADHOCRACY (Mutual Adjustment)

(= coordination mechanism)

Mintzberg H Structures in Fives
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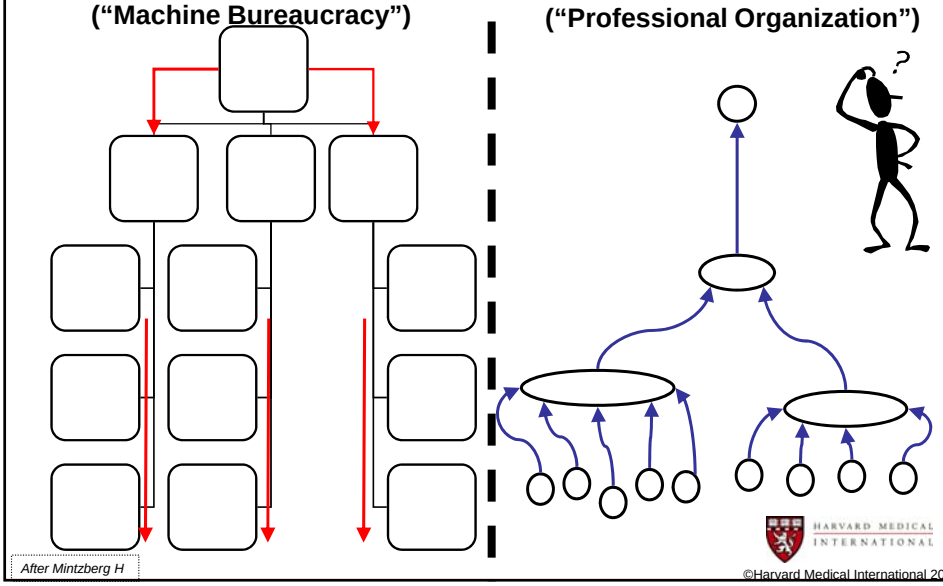
The professional – administrative divide

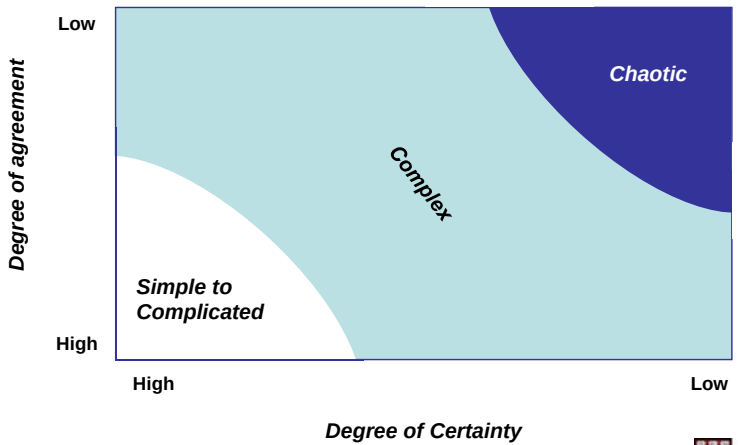
ADMINISTRATION & COMPLIANCE
("Machine Bureaucracy")

ACADEMIC ORIENTATION
("Professional Organization")



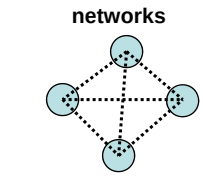
After Mintzberg H

Characteristics of Systems

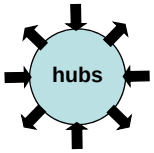


Source: Plsek PE, Greenhalgh T. BMJ 2001;323:625-28

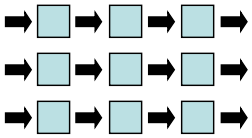
Organizational Structures to Fit the Tasks



Complex problem solving and customized delivery



Coordination and extraction of patterns



Creation of rules and dissemination of support

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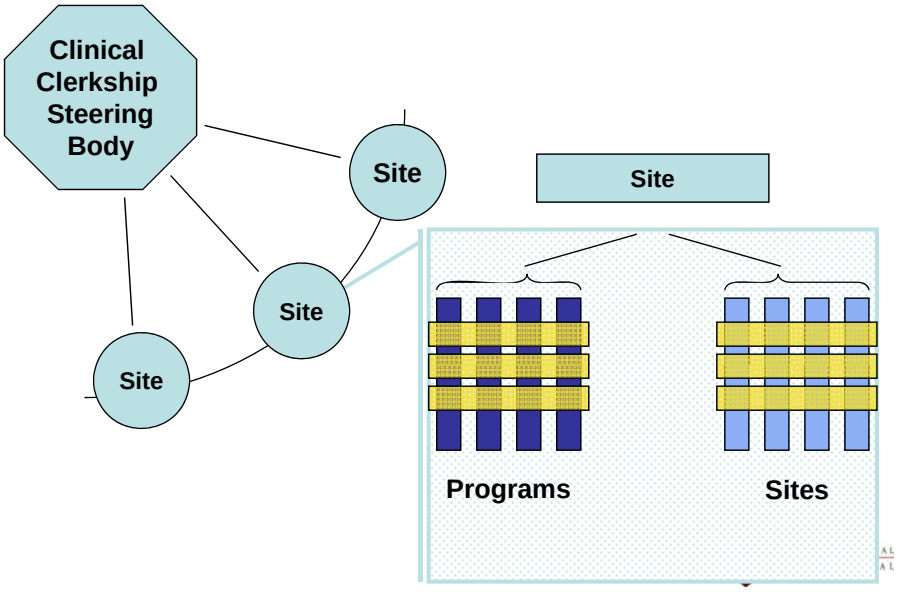
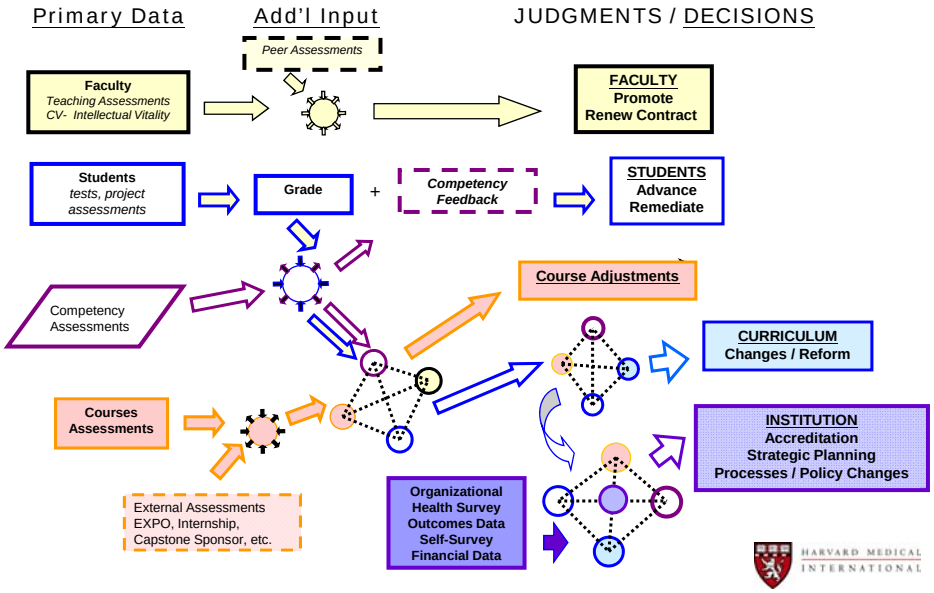
Example
A clinical clerkship model



The quality management system at a new engineering school



Why Everybody Needs a Hub

- Enables Efficiency
  - Value added by collecting, collating, storing, analyzing, and disseminating data.
  - Makes multiple uses of the same data possible.
  - Eliminates duplication of effort.
  - Maximizes resource use
  - Creates INTENTIONAL use of data/ensures feedback loops
  - Draws together all relevant data

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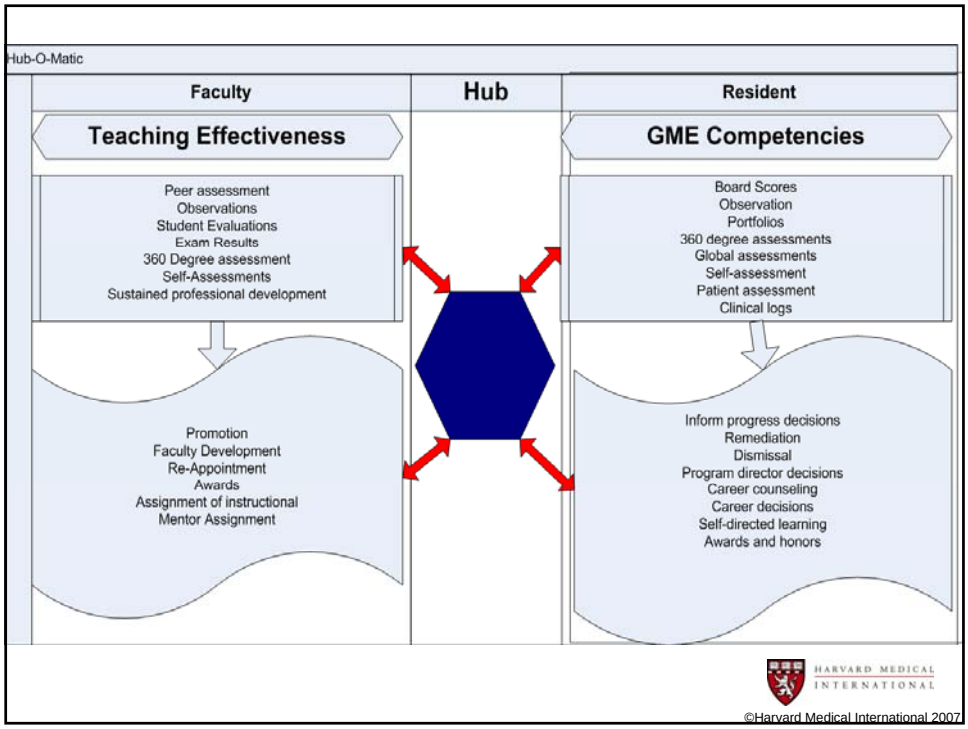
Hub-O-Matic
Faculty
Hub
Resident
Teaching Effectiveness
GME Competencies
Peer assessment
Observations
Student Evaluations
Exam Results
360 Degree assessment
Self-Assessments
Sustained professional development
Board Scores
Observation
Portfolios
360 degree assessments
Global assessments
Self-assessment
Patient assessment
Clinical logs
Promotion
Faculty Development
Re-Appointment
Awards
Assignment of instructional
Mentor Assignment
Inform progress decisions
Remediation
Dismissal
Program director decisions
Career counseling
Career decisions
Self-directed learning
Awards and honors
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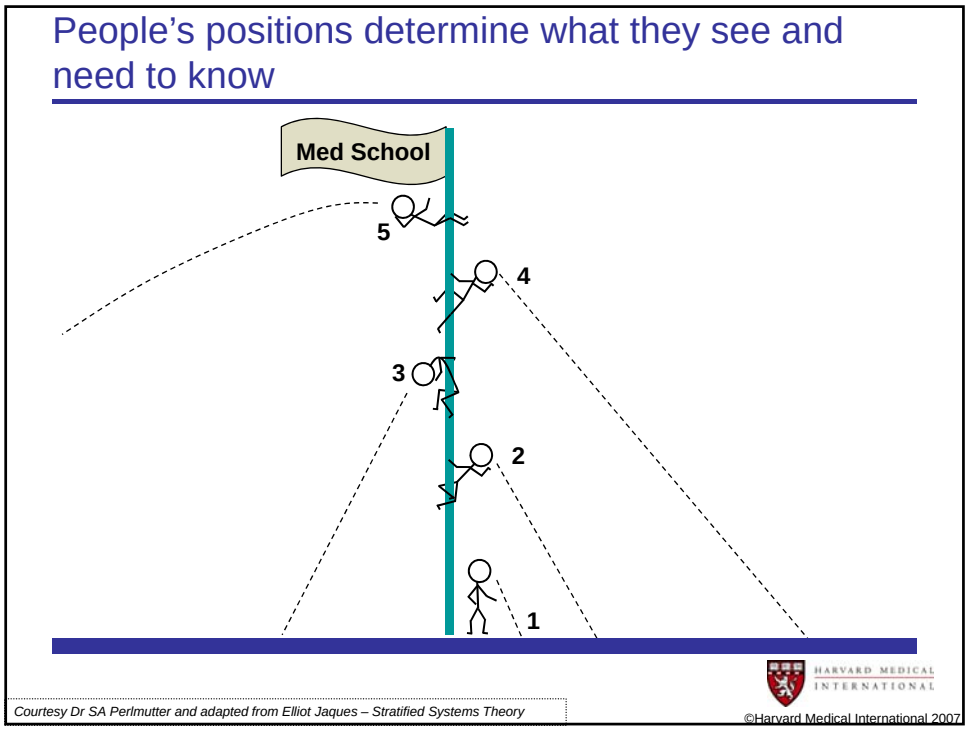
People's positions determine what they see and need to know
Med School
5
4
3
2
1
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Courtesy Dr SA Perlmutter and adapted from Elliot Jaques – Stratified Systems Theory
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Scope of work and knowledge generation at different levels of the organization

Level	Scope of Work	Knowledge
5	Focus is on interdependencies of organization with external environment – predicts future events & sets directional change.	"knows major trends, internal capabilities and major uncertainties- generates strategies
4	Manages multiple departments and their interdependencies.	Generates …'if this and this and that … then maybe we should…'
3	Unit manager – studies trends, anticipates needs and resources.	Generates …'if this … then that' hypotheses
2	Work less prescriptive, combines protocols & guidelines.	It should be 'this' or 'that'
1	Work is quite prescriptive, concrete and protocol driven.	There is one correct way to do this job

Courtesy Dr SA Perlmutter and adapted from Elliot Jaques – Stratified Systems Theory

Levels of leadership

Level 5 Executive — **Builds enduring greatness through a paradoxical mix of personal humility and professional will**

Effective Leader — **Catalyzes commitment to and vigorous pursuit of a clear and compelling vision, stimulating higher performance standards**

Competent Manager — **Organizes people and resources towards the effective and efficient pursuit of predetermined objectives**

Contributing Team Member — **Contributes individual capabilities to the achievement of group objectives, and works effectively with others in a group setting**

Highly Capable Individual — **Makes productive contributions through talent, knowledge, skills, and good work habits**

Collins J. Good to Great in the Social Sector.

Outline

- Why knowledge management
- What is knowledge and what kinds of knowledge are there
- How to manage knowledge
- Quality management vs. knowledge management
- Organizational structure
- **Changing the organization**
- Planning for the future

You are members of a taskforce that has been asked by the Dean to create a new curriculum management system. The Dean asked you in your first meeting to please outline some steps on how to develop and implement this system for your school.

Change management: the eight-step process

1. Establishing a sense of urgency

- Conduct a knowledge audit
- Identify and discuss crises, potential crises, or major opportunities

2. Creating the guiding coalition

- Put together a group with enough power to lead the change
- Get the group to work together like a team

3. Developing a vision and strategy

- Create a knowledge vision to help direct a change effort
- Develop strategies for achieving the vision

4. Communicating the change vision

- Use every vehicle possible to constantly communicate that vision and strategy
- Have the guiding coalition role model the behavior expected from employees

Kotter JP. Leading Change. HBR Press. 1996

Change management: the eight-step process

5. Empower broad-based action

- Get rid of obstacles
- Change systems or structures that undermine the change vision
- Encourage risk taking, non-traditional ideas, activities and actions

6. Generating short-term wins

- Plan for visible improvements in performance, or "wins"; run pilots
- Create those wins
- Visibly recognize and reward the people who made those wins possible

7. Consolidating and producing more gains

- Use the increased credibility to change all systems, structures and policies that don't fit together and that don't fit the transformation vision
- Hire, promote and develop people that can implement the change vision
- Reinvigorate the process with new projects, themes and personnel

8. Anchoring new approaches in the culture

- Create better performance through more effective knowledge management
- Articulate the connection between new behaviors and organizational success
- Develop means to assure sustainability

Kotter JP. Leading Change. HBR Press. 1996

Defining the four antecedent processes to change

Chartering The process by which the organization defines the initiative's purpose, its scope and the way people will work with one another on the program

Learning How managers develop, test and refine ideas through experimentation before a full-scale rollout

Mobilizing The use of symbolism, metaphors and compelling stories to engage hearts as well as minds in order to build commitment to the project

Realigning A series of activities aimed at reshaping the organizational context, including a redefinition of the roles and reporting relationships as well as new approaches to monitoring measuring and compensation

Roberto MA, Levesque LC. MITSloan Management Review, 2005;46(4):53-60

Defining the four antecedent processes to change

Chartering The process by which the organization defines the initiative's purpose, its scope and the way people will work with one another on the program

- Boundary setting – definition of scope of initiative
- Team designs – definition of roles, responsibilities, norms and ground rules for teamwork

Roberto MA, Levesque LC. MITSloan Management Review, 2005;46(4):53-60

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Defining the four antecedent processes to change

Learning How managers develop, test and refine ideas through experimentation before a full-scale rollout

- Discovery – data and information gathering to define goals of initiative and means of achieving objectives
- Experimentation – testing and refinement of initiative prior to full-scale rollout

Roberto MA, Levesque LC. MITSloan Management Review, 2005;46(4):53-60

Defining the four antecedent processes to change

Mobilizing The use of symbolism, metaphors and compelling stories to engage hearts as well as minds in order to build commitment to the project

- Storytelling – use of stories and metaphors to create compelling accounts about need for initiative and explain specific changes
- Symbolic actions – use of symbols to reinforce credibility and legitimacy of the core team and its message

Roberto MA, Levesque LC. MITSloan Management Review, 2005;46(4):53-60

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Defining the four antecedent processes to change

Realigning A series of activities aimed at reshaping the organizational context, including a redefinition of the roles and reporting relationships as well as new approaches to monitoring measuring and compensation

- Job redesign – alteration of underlying structure and process to support jobs
- Performance management – invention of new metrics to measure effectiveness of initiative and incorporation of the metric into employee performance appraisal process

Roberto MA, Levesque LC. MITSloan Management Review, 2005;46(4):53-60

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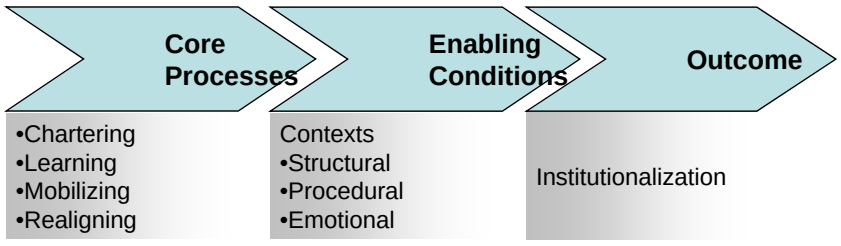
Laying the foundation for enduring change



Roberto MA, Levesque LC. MITSloan Management Review, 2005;46(4):53-60

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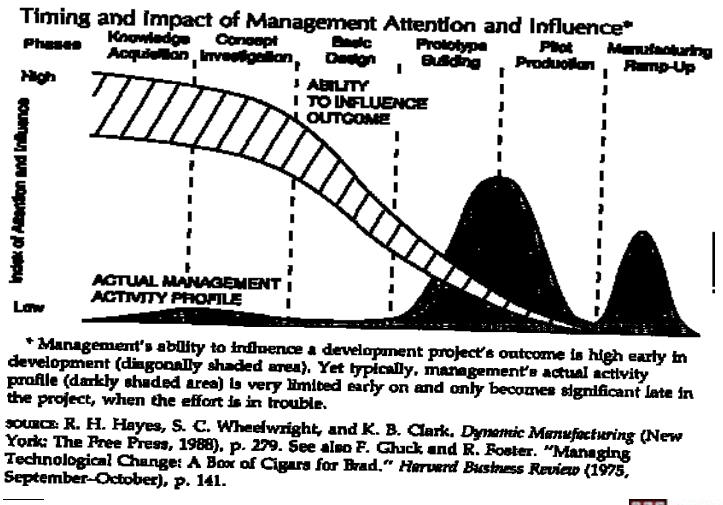
Timing of influence



Source: Clark & Wheelwright

"In time of profound change, the learners inherit the earth, while the learned find themselves beautifully equipped to deal with a world that no longer exists."

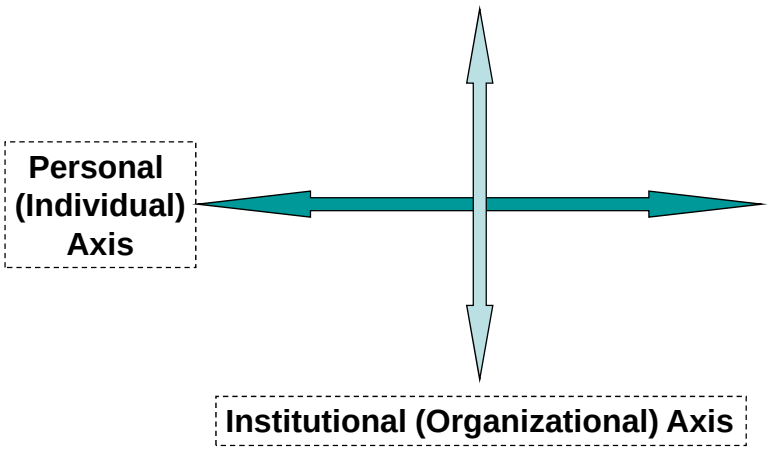
Al Rogers

Conditions that must be met for change to occur

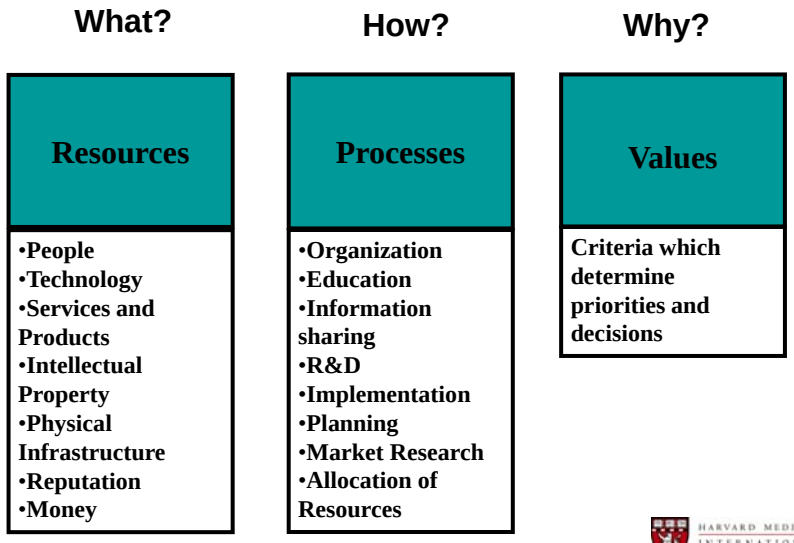
Pressure for Change	+	A Clear Shared Vision	+	Capacity for Change	+	Actionable First Steps	=	**CHANGE**
	+	A Clear Shared Vision	+	Capacity for Change	+	Actionable First Steps	=	**Bottom of the "In" Box**
Pressure for Change	+		+	Capacity for Change	+	Actionable First Steps	=	**A fast start that fizzles**
Pressure for Change	+	A Clear Shared Vision	+		+	Actionable First Steps	=	**Ambitions frustrated**
Pressure for Change	+	A Clear Shared Vision	+	Capacity for Change	+		=	**Haphazard efforts, false starts**

After L A Benningson

Tensions in professional organizations



Institutional elements that influence the change process



Adapted from Christensen C. HBR

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What is culture?

Culture is "the deeply embedded patterns of organizational behavior and the shared values, assumptions, beliefs, or ideologies that members have about their organizations or its work"

Source: Petersen and Spencer

Culture is "Obedience to the Unenforceable"

"*It is a realm in which not law, not caprice, but virtues such as duty, fairness, judgment, … hold sway. In a word, it … covers all cases of right doing where there is no one to make you do it but yourself.*"

John Fletcher Moulton

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Bergquist's framework of culture

- **Collegial culture**
  - Arises from disciplines of faculty. It values scholarship, shared governance and decision making, and rationality
- **Managerial culture**
  - Focuses on goals and purposes of the organization. It values efficiency, effective supervisory skills and fiscal responsibility
- **Developmental culture**
  - Based on personal and professional growth of all members in a collegial environment
- **Negotiating culture**
  - Values equitable policies and procedures, confrontation, interest groups, negotiation and power

Kezar A, Eckel PD. The Journal of Higher Education. 2002;73:435-460

Culture over process, some observations

- "….. excellence and serenity are not synonymous; excellence requires periodic painful change, whereas serenity protects individuals, institutions, and traditions at the price of lost opportunities." [1]
- "Culture trumps process anytime" [2]

1 Michels R.N Eng J Med 2003;350:p. 2426
2 nytimes.typepad.com/employercentral/2005/12/index.html

Why most knowledge management efforts fail

- Senior management is not backing the effort
- The effort is driven by one department and not the whole organization
- The staff is not involved in the effort and there is no buy-in
- The effort is seen as a quick fix
- The effort puts too much emphasis on technology

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Outline

- Why knowledge management
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- Organizational structure
- Changing the organization
- **Planning for the future**

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Questions

- **In the next five years**
  - Who will be the major stakeholders in the medical education at your institution? – **Who** might know something
  - What will be the major external forces affecting your institution? – What do you **need to know you should know**
  - What are major uncertainties that you think will affect your institution? – What do you **need to know that you do not know**

Some quotes

"It's hard to predict things, especially the future"

Yogi Berra

"If you do not know where you are going, every road will get you nowhere"

Henry Kissinger

"They couldn't hit an elephant at this dist…"

Last words of General Sedgwick

"People will never type with their thumbs"

Bill Gates

Scenario planning

- **What are scenarios?**
- **Why use scenarios?**
- **How do you construct scenarios?**

What are scenarios?

- **Scenarios have been compared to explorations**
  - Finding out as much as possible about where you are going and the best path on how to get there
  - Planning for contingencies, both predictable and unpredictable and their relative impact
- **Above all, they are stories that**
  - Try to capture a range of possibilities that might otherwise be ignored
  - Are more easily grasped than a lot of data
  - Challenge the prevailing mind-set and assumptions
  - Find a middle ground between under- and over-prediction
  - Try to help maximize opportunity and minimize risk

Adapted from Shoemaker, Sloan Management Review 1995

Why use scenarios

- **There is high and complex uncertainty**
- **Past planning was off the mark**
- **There is stagnant and no strategic thinking in the organization**
- **There are many changes in the environment**
- **People have diverse opinions, all of which may be valid, yet they cannot be discussed using a common language**

Adapted from Shoemaker, Sloan Management Review 1995

The future of the academic medicine five scenarios as examples

Academic Inc	**Academic medicine flourishes in the private sector**
Reformation	**All teach, learn, research, and improve**
In the public eye	**Success comes form delighting patients, the public, and media**
Global partnership	**Academic medicine for global health equity**
Fully engaged	**Academic medicine engages energetically with all stakeholders**

Clark J. Five futures for academic medicine: the ICRAM scenarios. BMJ 2005;331:101-104
http://www.milbank.org/reports/0507FiveFutures/0507FiveFutures.pdf

The future of the academic medicine five scenarios

Features common to all scenarios

- Improved relations to all stakeholders and organizations to support efforts
- Greater global outlook
- Areas of concentration – no more "jack of all trades"
- Increasing competition including international
- Need to use business approach and media relations
- Learning will be more important, life-long and often technology-supported
- Research will be more integrated from science to implementation
- Increase in diversity of academic institutions
- Medicine will need to work with and learn from other disciplines
- Planning for the future will play a greater and more difficult role

Clark J. Five futures for academic medicine: the ICRAM scenarios. BMJ 2005;331:101-104
http://www.milbank.org/reports/0507FiveFutures/0507FiveFutures.pdf

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How do you construct scenarios

- **Basic principle:** Divide our knowledge into two areas:
  - What we think we know something about
  - What we deem uncertain or unknowable
- **Steps:**
  - Define the scope and time frame – then look back that far
  - Identify major stakeholders
  - Identify major trends (positive <> negative <> uncertain); all must agree, otherwise…
  - Identify key uncertainties including their possible linkages
  - Construct initial scenario themes – (e.g. all positives in one, all negatives (relative to goals and strategy) in the other; most significant uncertainties)
  - Check for consistency and plausibility
  - Create learning scenarios
  - Develop quantitative models
  - Evolve towards decision scenarios

Adapted from Shoemaker, Sloan Management Review 1995

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How do you judge scenarios

- **Are they relevant, i.e. do they speak to the stakeholders**
- **Are they internally consistent**
- **Are they archetypical, or just variations on one theme**
- **Are they states of equilibrium that could persist for a reasonable time**

Adapted from Shoemaker, Sloan Management Review 1995

Questions to think about when planning any project, including knowledge management

- **What is the reason for doing this? What are the goals and desired outcomes? How will success be measured?**
- **Who will be impacted? Who are the allies and opponents?**
  - Internal and external
  - Who needs to be in the process or is in the process at this time?
  - Who is my target audience – student, faculty, policy makers?
- **What are the barriers and enabling conditions?**
  - Known and unknown
  - Predictable and unpredictable
- **What are my sources of information?**
  - Internal and external
  - Formal and informal
- **What is the organizational structure needed to accomplish this?**
  - Can I build on present structure? Does it need new structures?
- **What are the steps in implementation? What is my timeline?**
- **What are new methodologies or concepts requiring change in behavior and how will that be accomplished?**
- **What are the resources required?**
  - Human, space, time, money, technology, etc.
  - What can I build on or rework?
- **Who is going to maintain and monitor in the future? What data and information will need to be collected and how will they be used?**

Survival Guide for Change Agents

- Make the case and create pressure for change- threat or opportunity, fear or greed
- Have a vision for change, articulate it simply
- Form power coalitions
  - analyze the power structure
  - be prepared to negotiate parts of your vision away
  - gain power by sharing it
- Scope the work effort and develop a plan
  - barriers and facilitators- force field analysis
  - organization/structure
  - deliverables
  - timetable
  - chunking the work
  - resources

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Survival Guide for Change Agents

- Build a team
- Manage the process
  - Set priorities
  - Run good meetings
  - Manage conflict
  - When more deliberation is asked for -- don't
    - do it, fix it
    - 80% solutions
    - The perfect is the enemy of the good
- Prematurely declare success but use it to set next objectives/tasks
- Take your job seriously, not yourself

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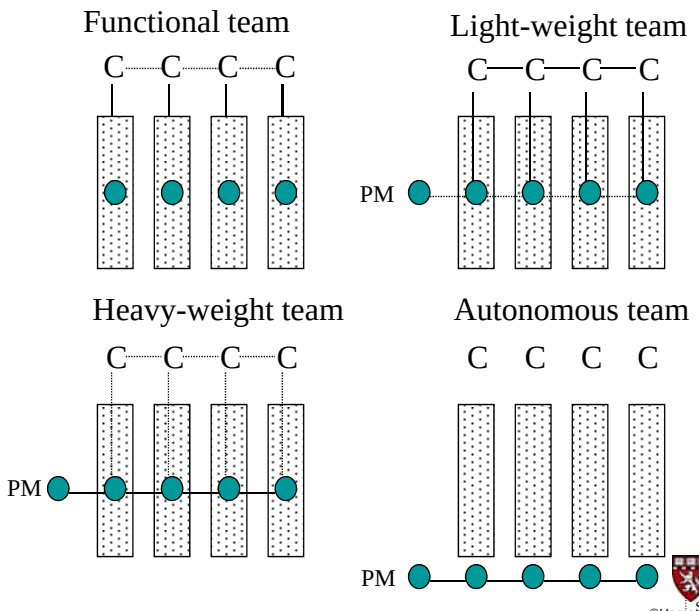
Types of teams



Source: Clark & Wheelwright

Selecting a process for decision making

How critical is it that there be agreement?

How critical is the concrete outcome?	*Low*	*High*
Low	Avoid or delegate	Give it to a committee to reach agreement
High	Decide where it is done best (in house/outsource)	Collaborative, conjoint problem solving

Committee vs. task force

	Committee	***Task force***
Purpose	Consensus	Product
Chair	Facilitator	Manager
Members	Political appointees	Experts
Rights	Advisory, oversight	Design of the product
Timeline	Often indeterminate	Fixed [until product is done]
Dynamics	Accommodation	Collaboration
Metrics	Serenity	Quality and success of product

Conditions fostering effectiveness in group processes

- **Clear engaging directions**
- **Enabling performance situation**
  - Facilitative group structure
    - *Well-structured group task*
    - *Well-composed group*
    - *Appropriate norms of behavior*
  - Supportive organizational context
    - *Reward system*
    - *Educational system*
    - *Information system*
  - Available expert coaching
- **Adequate material resources**

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Adopted from Hackman and Wageman

Effective teamwork

- Team's output meets external standards
  - Product
- Team experience rewards its members
  - Individual learning
- Team experience enhances future collaboration and learning
  - Team learning

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Adopted from Hackman and Wageman

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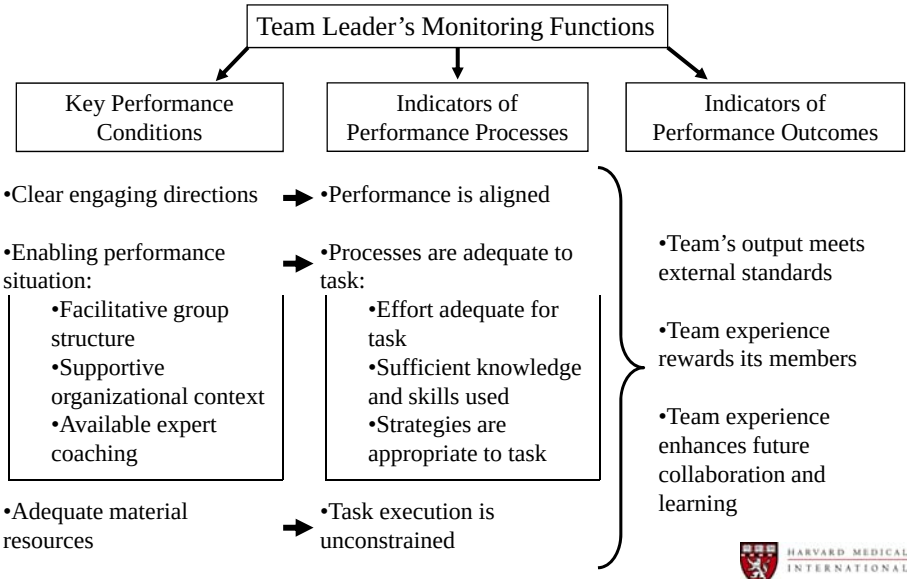
Summary of team leader's functions



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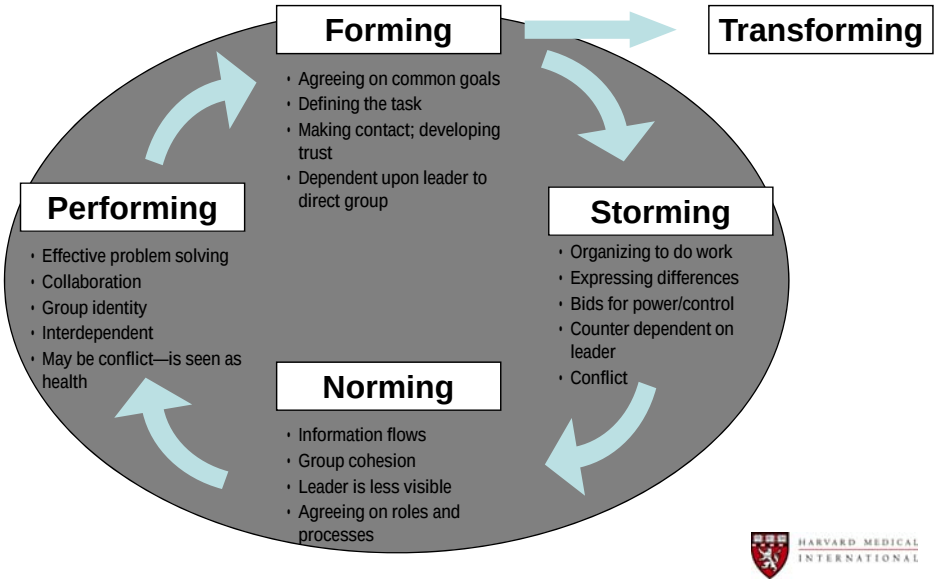
Adapted from Hackman and Walton

Tuckman Model of Group Development



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The Life of a Task Force or Design Team

	First meeting	Phase I	Midpoint transition	Phase II	Completion
Team behavior	**Formation of team and understanding of task and rules**	**Exploration, learning, struggling, trial and error; few results**	**Major upheaval and redesign**	**Major production period**	**Completion of task and evaluation**
Leader role	**•Define task; •Establish boundaries; •Define norms of behavior**	**•No significant role**	**•Help reflection; •Identify issues; •Re-(de)fine task; •Check on norms**	**•Monitor progress and coach; •Run external interference**	**•Guide and encourage reflection on personal and team growth**

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Adapted from Gersick, as quoted by Hackman and Walton

Olin's processes
What are the structures? How do they interact?