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
## Outline

<table>
<thead>
<tr>
<th>Why knowledge management</th>
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</tr>
</tbody>
</table>

## 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?
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

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

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.
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

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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)

Adapted 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?

A quick organizational knowledge survey

<table>
<thead>
<tr>
<th>I have easy access to it</th>
<th>Agree strongly</th>
<th>Disagree strongly</th>
</tr>
</thead>
<tbody>
<tr>
<td>I know who the persons are that create it</td>
<td>1   2   3   4   5</td>
<td></td>
</tr>
<tr>
<td>I know how current it is</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It helps me make decisions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I know exactly to whom to go to get it</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My colleagues and I use it all the time to learn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can use it for many things</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outsiders ask us for it all the time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My colleagues and I know exactly how to use it best</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is totally reliable</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Knowledgeable vs. ignorant organizations

<table>
<thead>
<tr>
<th>Knowledgeable organization</th>
<th>Ignorant organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is aware of what it knows</td>
<td>Does not know what it knows</td>
</tr>
<tr>
<td>Is aware of what it does not know</td>
<td>Does not know what it does not know</td>
</tr>
</tbody>
</table>

How individuals become experts

- Pattern Recognition
- Prioritization
- Analysis plan
- Use of analogies
- Specialization of general routines
- Implementation
- Next iteration
- Reflection

The organizational learning spiral

Knowledge conversations
Sharing ideas in a social context

Tacit to Tacit

Developing new ideas and learning by doing

Explicit to Tacit

Explicit to Explicit

Emergence of new ideas via analogies and metaphors

Tacit to Explicit

Combining knowledge to test ideas

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

The Kolb learning cycle applied to organizations

Let’s capture them and apply to new issues

Let’s try them out and validate them

Applying it to new problems, learn by doing

Internalize the new knowledge

Experiment and test them

Combine ideas and formulate new concepts

GROWTH

real life experience

Sharing them with others

Compare and contrast

Generate new ideas

thinking

reflecting

doing

Let’s share our knowledge and experiences

Let’s see if we can generate new ideas

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Structural dimensions underlying the process of experiential learning and learning styles

- Concrete Experience (experiencing)
- Reflective Observation (reflecting)
- Abstract Conceptualization (thinking)
- Active Experimentation (doing)
- Diverging
- Converging
- Assimilating
- Accommodating

Scholarship and the various forms of knowledge (Boyer)

<table>
<thead>
<tr>
<th>Experiencing</th>
<th>Thinking and Analyzing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimenting and Acting</td>
<td>Reflecting and Observing</td>
</tr>
<tr>
<td>Transformation of knowledge and the meaning of that knowledge</td>
<td>Integration and Synthesis of knowledge</td>
</tr>
<tr>
<td>Applying knowledge and learning in the workplace</td>
<td>Discovery of new knowledge and innovation</td>
</tr>
</tbody>
</table>
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

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
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.”

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.

<table>
<thead>
<tr>
<th>Problems</th>
<th>166</th>
<th>Errors</th>
<th>28</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missing or incorrect information</td>
<td></td>
<td>By the nurse</td>
<td>39%</td>
</tr>
<tr>
<td>Missing or broken equipment</td>
<td></td>
<td>By other people</td>
<td>18%</td>
</tr>
<tr>
<td>Waiting for a resource</td>
<td></td>
<td>Unnecessary actions</td>
<td>43%</td>
</tr>
<tr>
<td>Missing or incorrect supplies</td>
<td></td>
<td>due to faulty process</td>
<td></td>
</tr>
<tr>
<td>Simultaneous demands on time</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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
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.
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Quality continuum: From system to individual

- Institutional Quality
- System Quality
- Curriculum Quality
- Individual/Team Quality

Objective outcomes: Satisfaction
Two systems of production and their quality management

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
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

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)
**Process: Assessment & Evaluation**

- **OUTCOMES-BASED JUDGEMENTS**
- **GOAL** purpose of assessment
- **DOMAINS** to be examined
- **STANDARDS** to be applied to data
- **EVALUATION INTERPRETATION**
- **Data Collection & Context**
- Assessment METHODS used

**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

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

Quality in education requires learning at multiple levels

Learning about students

• individuals
• teams

Learning about programs

• organizations
• system

adapted from Bohmer, R. HBS 2003
Managing learning

"Ignorance more frequently begets confidence than does knowledge"

C. Darwin (1871)
### Stages of knowledge

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

<table>
<thead>
<tr>
<th>Process</th>
<th>Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>The way tasks are organized</td>
<td>The way things are done</td>
</tr>
<tr>
<td>Routine</td>
<td>Spontaneous</td>
</tr>
<tr>
<td>Orchestrated</td>
<td>Improvised</td>
</tr>
<tr>
<td>Assumess a predictable environment</td>
<td>Responds to a changing, unpredictable environment</td>
</tr>
<tr>
<td>Relies on explicit knowledge</td>
<td>Driven by tacit knowledge</td>
</tr>
<tr>
<td>Linear</td>
<td>Web-like</td>
</tr>
<tr>
<td>Top-down</td>
<td>Bottom-up</td>
</tr>
<tr>
<td>Efficiency</td>
<td>Effectiveness</td>
</tr>
</tbody>
</table>

The process – practice divide

(adapted from Brown JS, Duguid P. HBR 2000)

After Mintzberg H
Organizational learning must be managed

Individuals learn naturally, teams and organizations do not

<table>
<thead>
<tr>
<th>Individual learning</th>
<th>Organizational and team learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk is private</td>
<td>Risk is public</td>
</tr>
<tr>
<td>Knowledge is separable</td>
<td>Knowledge is integral</td>
</tr>
<tr>
<td>Data collection and analysis automatically integrated</td>
<td>Processes are required for reflection and integration</td>
</tr>
<tr>
<td>Typically rapid, requiring few experiences</td>
<td>Often slow, requiring many experiences</td>
</tr>
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</table>

Organizational learning must be managed

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
Organizational governance – working towards sustainability and improvement

- Strategy
  - Metrics of Success and Oversight
- Operational and Implementation Plan
- Implementation
  - Data and Feedback
  - Guidelines and Support

Consensus
  - "Defining what's common"

Implementation and management
  - "Being specific"
Mintzberg's Taxonomy of Organizational Forms

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

$$\text{Environmental Variety } \equiv \text{ Complexity } \times \text{ Pace of Change}$$

Four combinations of complexity and change

<table>
<thead>
<tr>
<th></th>
<th>SIMPLE</th>
<th>COMPLEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>STABLE</td>
<td>MACHINE BUREAUCRACY (Standardized work processes and outputs)</td>
<td>PROFESSIONAL ORGANIZATION (Standardized skills and norms)</td>
</tr>
<tr>
<td>DYNAMIC</td>
<td>ENTREPRENEURIAL STARTUP (Direct supervision)</td>
<td>ADHOCRACY (Mutual Adjustment)</td>
</tr>
</tbody>
</table>

(= coordination mechanism)
The professional – administrative divide

**ADMINISTRATION & COMPLIANCE**
(“Machine Bureaucracy”)

**ACADEMIC ORIENTATION**
(“Professional Organization”)

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Characteristics of Systems

Source: Plsek PE, Greenhalgh T. BMJ 2001;323:625-28
Organizational Structures to Fit the Tasks

networks

Complex problem solving and customized delivery

hubs

Coordination and extraction of patterns

chains

Creation of rules and dissemination of support

Example
A clinical clerkship model
The quality management system at a new engineering school

Primary Data
- Faculty
  - Teaching Assessments
  - CV, Intellectual Vitality
- Students
  - Tests, project assessments
- Competency Assessments
- Courses Assessments

Add'l Input
- Post Assessments

JUDGMENTS / DECISIONS
- Faculty
  - Promote, Renew Contract
- Students
  - Advance, Remediate

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
People’s positions determine what they see and need to know
### Scope of work and knowledge generation at different levels of the organization

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

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

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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

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
Defining the four antecedent processes to change

<table>
<thead>
<tr>
<th>Process</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chartering</td>
<td>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.</td>
</tr>
<tr>
<td>Learning</td>
<td>How managers develop, test and refine ideas through experimentation before a full-scale rollout.</td>
</tr>
<tr>
<td>Mobilizing</td>
<td>The use of symbolism, metaphors and compelling stories to engage hearts as well as minds in order to build commitment to the project.</td>
</tr>
<tr>
<td>Realigning</td>
<td>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.</td>
</tr>
</tbody>
</table>

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

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

**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

Defining the four antecedent processes to change

**Realining**
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

Laying the foundation for enduring change

<table>
<thead>
<tr>
<th>Core Processes</th>
<th>Enabling Conditions</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Chartering</td>
<td>• Contexts</td>
<td>Institutionalization</td>
</tr>
<tr>
<td>• Learning</td>
<td>• Structural</td>
<td></td>
</tr>
<tr>
<td>• Mobilizing</td>
<td>• Procedural</td>
<td></td>
</tr>
<tr>
<td>• Realining</td>
<td>• Emotional</td>
<td></td>
</tr>
</tbody>
</table>
"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

<table>
<thead>
<tr>
<th>Pressure for Change</th>
<th>A Clear Shared Vision</th>
<th>Capacity for Change</th>
<th>Actionable First Steps = CHANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bottom of the “In” Box</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>A fast start that fizzles</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ambitions frustrated</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Haphazard efforts, false starts</td>
</tr>
</tbody>
</table>

Tensions in professional organizations

Personal (Individual) Axis

Institutional (Organizational) Axis

After L. A. Benningson

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Institutional elements that influence the change process

<table>
<thead>
<tr>
<th>What?</th>
<th>How?</th>
<th>Why?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resources</td>
<td>Processes</td>
<td>Values</td>
</tr>
<tr>
<td>• People</td>
<td>• Organization</td>
<td>Criteria which</td>
</tr>
<tr>
<td>• Technology</td>
<td>• Education</td>
<td>determine</td>
</tr>
<tr>
<td>• Services and</td>
<td>• Information</td>
<td>priorities and</td>
</tr>
<tr>
<td>Products</td>
<td>sharing</td>
<td>decisions</td>
</tr>
<tr>
<td>• Intellectual</td>
<td>• R&amp;D</td>
<td></td>
</tr>
<tr>
<td>Property</td>
<td>• Implementation</td>
<td></td>
</tr>
<tr>
<td>• Physical</td>
<td>• Planning</td>
<td></td>
</tr>
<tr>
<td>Infrastructure</td>
<td>• Market Research</td>
<td></td>
</tr>
<tr>
<td>• Reputation</td>
<td>• Allocation of</td>
<td></td>
</tr>
<tr>
<td>• Money</td>
<td>Resources</td>
<td></td>
</tr>
</tbody>
</table>

Adapted from Christensen C. HBR

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
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

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.”

- “Culture trumps process anytime”
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

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
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

The future of the academic medicine
five scenarios as examples

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Inc</td>
<td>Academic medicine flourishes in the private sector</td>
</tr>
<tr>
<td>Reformation</td>
<td>All teach, learn, research, and improve</td>
</tr>
<tr>
<td>In the public eye</td>
<td>Success comes form delighting patients, the public, and media</td>
</tr>
<tr>
<td>Global partnership</td>
<td>Academic medicine for global health equity</td>
</tr>
<tr>
<td>Fully engaged</td>
<td>Academic medicine engages energetically with all stakeholders</td>
</tr>
</tbody>
</table>
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

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
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

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

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
Types of teams

- **Functional team**
  - C—C—C—C

- **Light-weight team**
  - C—C—C—C
  - PM

- **Heavy-weight team**
  - C—C—C—C
  - PM

- **Autonomous team**
  - C  C  C  C

Source: Clark & Wheelwright
Selecting a process for decision making

How critical is it that there be agreement?

<table>
<thead>
<tr>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoid or</td>
<td>Give it to a committee to reach agreement</td>
</tr>
<tr>
<td>delegate</td>
<td></td>
</tr>
</tbody>
</table>

How critical is the concrete outcome?

<table>
<thead>
<tr>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decide</td>
<td>Collaborative, conjoint problem solving</td>
</tr>
<tr>
<td>where it</td>
<td></td>
</tr>
<tr>
<td>is done</td>
<td></td>
</tr>
<tr>
<td>best</td>
<td></td>
</tr>
<tr>
<td>(in house/</td>
<td></td>
</tr>
<tr>
<td>outsource)</td>
<td></td>
</tr>
</tbody>
</table>

Committee vs. task force

<table>
<thead>
<tr>
<th></th>
<th>Committee</th>
<th>Task force</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose</td>
<td>Consensus</td>
<td>Product</td>
</tr>
<tr>
<td>Chair</td>
<td>Facilitator</td>
<td>Manager</td>
</tr>
<tr>
<td>Members</td>
<td>Political appointees</td>
<td>Experts</td>
</tr>
<tr>
<td>Rights</td>
<td>Advisory, oversight</td>
<td>Design of the product</td>
</tr>
<tr>
<td>Timeline</td>
<td>Often indeterminate</td>
<td>Fixed [until product is done]</td>
</tr>
<tr>
<td>Dynamics</td>
<td>Accommodation</td>
<td>Collaboration</td>
</tr>
<tr>
<td>Metrics</td>
<td>Serenity</td>
<td>Quality and success of product</td>
</tr>
</tbody>
</table>
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

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
Summary of team leader’s functions

Team Leader’s Monitoring Functions

<table>
<thead>
<tr>
<th>Key Performance Conditions</th>
<th>Indicators of Performance Processes</th>
<th>Indicators of Performance Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Clear engaging directions</td>
<td>• Performance is aligned</td>
<td>• Team’s output meets external standards</td>
</tr>
<tr>
<td>• Enabling performance situation:</td>
<td>• Processes are adequate to task:</td>
<td>• Team experience rewards its members</td>
</tr>
<tr>
<td>• Facilitative group structure</td>
<td>• Effort adequate for task</td>
<td>• Team experience enhances future collaboration and learning</td>
</tr>
<tr>
<td>• Supportive organizational context</td>
<td>• Sufficient knowledge and skills used</td>
<td></td>
</tr>
<tr>
<td>• Available expert coaching</td>
<td>• Strategies are appropriate to task</td>
<td></td>
</tr>
<tr>
<td>• Adequate material resources</td>
<td>• Task execution is unconstrained</td>
<td></td>
</tr>
</tbody>
</table>

Tuckman Model of Group Development

- **Forming**
  - Agreeing on common goals
  - Defining the task
  - Making contact; developing trust
  - Dependent upon leader to direct group

- **Storming**
  - Organizing to do work
  - Expressing differences
  - Bids for power/control
  - Counter dependent on leader
  - Conflict

- **Performing**
  - Effective problem solving
  - Collaboration
  - Group identity
  - Interdependent
  - May be conflict—seen as health

- **Norming**
  - Information flows
  - Group cohesion
  - Leader is less visible
  - Agreeing on roles and processes

- **Transforming**
  - Adaptive learning
  - Systemic change
The Life of a Task Force or Design Team

<table>
<thead>
<tr>
<th>First meeting</th>
<th>Phase I</th>
<th>Midpoint transition</th>
<th>Phase II</th>
<th>Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team behavior</td>
<td>Formation of team and understanding of task and rules</td>
<td>Exploration, learning, struggling, trial and error; few results</td>
<td>Major upheaval and redesign</td>
<td>Major production period</td>
</tr>
<tr>
<td>Leader role</td>
<td>- Define task: Establish boundaries; Define norms of behavior</td>
<td>- No significant role</td>
<td>- Help reflection; identify issues; Re-(de)fine task; Check on norms</td>
<td>- Monitor progress and coach; Run external interference</td>
</tr>
</tbody>
</table>

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