Knowledge Complexity

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Outcomes

• Relate the knowledge complexity archetype to issues of nursing informatics and data science.
• Given best practices of knowledge leadership explain how to create communities of practice that make tacit nursing knowledge explicit.
Foreground - Background

• Knowledge
• Learning
• Service

• Research
• Education
• Practice
Knowledge Complexity Framework

Knowledge Complexity

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Knowledge Work

- **Data**: statistics, financial data, metrics, procedures, standards, user guides, specifications, regulations, audits, filing and classification, order processing.

- **Information (Procedural)**: workflow planning, priorities, graphs, engineering, historical data, tracking, database design & management.

- **Knowledge (Functional)**: business plans, goals, objectives, budgets, resources, roles, culture, managing variables, developing projects.

- **Meaning (Managing)**: strategic planning, systemic mapping, competitive analysis, market forecasts.

- **Philosophy (Systems)**: values, vision, future trends.

- **Wisdom (Renewing)**: social, environmental & global issues, activism, ecological values work.

- **Union**: social, environmental & global issues, activism, ecological values work.

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<table>
<thead>
<tr>
<th>Time</th>
<th>Consciousness</th>
<th>Knowledge Orientation</th>
<th>Learning Mode</th>
<th>Action Focus</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right Now (this moment)</td>
<td>Awareness</td>
<td>Data</td>
<td>Instinctual</td>
<td>Data (input)</td>
<td>Feedback (awareness)</td>
</tr>
<tr>
<td>Present (very short)</td>
<td>Physical Sentience</td>
<td>Information</td>
<td>Single-Loop</td>
<td>Procedural (procedure)</td>
<td>Efficiency (know what)</td>
</tr>
<tr>
<td>Expanded Present (short)</td>
<td>Self-Reflective</td>
<td>Knowledge</td>
<td>Double-Loop</td>
<td>Functional (engineer)</td>
<td>Effectiveness (know how)</td>
</tr>
<tr>
<td>Medium to Long (past to future)</td>
<td>Communal</td>
<td>Meaning</td>
<td>Communal</td>
<td>Managing (context)</td>
<td>Productivity (know why)</td>
</tr>
<tr>
<td>Long Term (far past and future)</td>
<td>Pattern</td>
<td>Philosophy</td>
<td>Duetero</td>
<td>Integrating (systems)</td>
<td>Optimization (create why)</td>
</tr>
<tr>
<td>Very Long (distant past to future)</td>
<td>Ethical</td>
<td>Wisdom</td>
<td>Generative</td>
<td>Renewing (purpose and values)</td>
<td>Integrity (care why)</td>
</tr>
<tr>
<td>Timeless (inter-generational)</td>
<td>Universal</td>
<td>Synergistic</td>
<td></td>
<td>Union (co-creating)</td>
<td>Sustainability (greater good)</td>
</tr>
</tbody>
</table>

The knowledge work we engage in needs to be supported in different ways in order for us to take effective action and achieve the level of performance we desire. (Allee, 1997)
Knowledge Spiral
Field Building

Tacit

Socialization

Explicit

Dialogue

Externalization

Explicit

Linking Explicit Knowledge

Explicit

Combination

Explicit

Learning by Doing

Explicit

Internalization

Tacit

Nonaka, & Takeuchi (1995)
KNOWLEDGE
Learning

ACTION FOCUS
Performance Goal

DATA
Instinctual learning
Sensing. The data mode of learning is at the sensory or input level. Little actual learning is taking place.

DATA
Feedback
Gathering information. Receiving input, registering data and variations without reflection.

Time perspective: Immediate moment
Consciousness: Awareness
<table>
<thead>
<tr>
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<th>ACTION FOCUS</th>
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<tbody>
<tr>
<td>Learning</td>
<td>Performance Goal</td>
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<table>
<thead>
<tr>
<th>INFORMATION</th>
<th>PROCEDURAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-Loop learning</td>
<td>Efficiency</td>
</tr>
<tr>
<td>Action without reflection</td>
<td>Doing something in the most</td>
</tr>
<tr>
<td>Procedural learning entails</td>
<td>efficient way. Conforming to</td>
</tr>
<tr>
<td>redirecting a course of action</td>
<td>standards or making simple</td>
</tr>
<tr>
<td>to follow a predetermined course.</td>
<td>adjustments and modifications.</td>
</tr>
<tr>
<td>Learning is mostly trial and error.</td>
<td>Focus is on developing and</td>
</tr>
<tr>
<td></td>
<td>following and completing tasks</td>
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</tbody>
</table>

Time perspective: Very short (present – now)  
Consciousness: Physical Sentience
<table>
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<tr>
<td>Double-Loop learning</td>
<td>Effectiveness</td>
</tr>
<tr>
<td><em>Self-conscious reflection.</em> A larger perspective that involves evaluation and modification of the goal or objective as well as design of the path or procedures used to get there. Learning requires self-conscious reflection.</td>
<td><em>Doing it the best way.</em> Evaluating and choosing between two or more alternative paths. Goals are effective action and resolution of inconsistencies. Focus is on effective work design and engineering aspects, such as process redesign.</td>
</tr>
</tbody>
</table>

Time perspective: Short (immediate past and present)  
Consciousness: Self-reflective
KNOWLEDGE
Learning

MEANING
Communal learning
*Understanding context, relationships and trends.* Learning requires the making of meaning, which includes understanding context of “the story,” seeing trends, and generating alternatives. Variables considered are relationships between components as well as comprehending roles and relationships between people.

ACTION FOCUS
Performance Goal

MANAGING
Productivity
*Understanding what promotes or impedes effectiveness.* Effective management and allocation of resources and tasks, using conceptual frameworks to analyze and track multiple variables. Encompasses planning and measuring results. Also attends to working roles, relationships and culture.

Time perspective: Medium to long (historic past, present, very near future)
Consciousness: Communal
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**WISDOM**

**Generative Learning**
*Value driven.* Learning for the joy of learning, in open interaction with the environment. It involves creative processes; heuristic, open-ended explorations; and profound self-questioning. Allows for the discovery of one's highest capabilities and talents, purpose, and intentions.

**RENEWING**

Integrity
*Finding or reconnecting with one’s purpose.* Defining or reconnecting with values, vision and mission. Understanding purpose. Very long-term frame leads to deep awareness of ecology, community and ethical action.

Time perspective: Very long-term (very distant past to far distant future)
Consciousness: Ethical
<table>
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<tr>
<th>PHILOSOPHY</th>
<th>INTEGRATING</th>
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<tr>
<td>Deutero Learning</td>
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<tr>
<td><em>Self-organizing.</em> Integrative or systemic learning seeks to understand dynamic relationships and nonlinear processes, discerning the patterns that connect, including archetypes and metaphors. Requires recognition of the embeddedness and interdependence of systems.</td>
<td></td>
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<tr>
<td>Optimization</td>
<td></td>
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<tr>
<td><em>Seeing where an activity fits the whole picture.</em> Understanding and managing sociocultural system dynamics. Focus is on the ability to adapt to a changing environment. Comprises long-range forecasting, development of multilevel strategies, and evaluating investments and policies with regard to long-term success.</td>
<td></td>
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Time perspective: Long-term (past, present, and future)
Consciousness: Pattern
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**UNION**

**Synergistic Connection.** Learning integrates direct experience and appreciation of oneness or deep connection with the greater cosmos. Requires contemplative processes that connect personal and collective purpose to the health and well-being of the larger community and the environment.

**UNION**

**Sustainability**

*Understanding values in greater context.* Intergenerational time perspective evokes commitment to the greater good of society, the environment, and the planet/Performance is demonstrated in actions consistent with these deeper values.

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Time perspective: Long-term (past, present, and future)
Consciousness: Pattern
Knowledge Intensive Organizations

- North Star
- Compass
- Good Crew
- Maps and Guides
- Sound Vessels
- Feedback
Knowledge Leadership

A North Star: There must be a clear, knowledge-centered identity and purpose and knowledge-sharing values that support self-organization.

Leadership must attend to how people hold the integrity of those values.

There must be continuing exploration of the organizational belief system regarding knowledge.

Knowledge Leadership

A Compass: There must be an integrated, systems approach and strategy that provides a direction for knowledge experiments.

There must be guiding principles for sharing knowledge. Such as an approach must address all modes of knowledge.

Knowledge Leadership

A Good Crew: Culture must support the behaviors of knowledge creation, inquiry, and sharing.

People need to know how to learn together.

People must be supported in linking with others to create and share knowledge

Knowledge Leadership

Maps and Guides: There should be flexible guides, maps, processes, and pathways for locating, tacking and sharing knowledge.

People need to know where and how to access what they need.

Knowledge Leadership

Sound Vessels: Supporting technologies, tools and equipment must be provided to foster communication, connectivity and the gathering of knowledge.

Knowledge Leadership

Feedback: Knowledge experiments need to be monitored, so people know how they are doing and can devise new experiments.

Knowledge Leadership

✧ Support people in their personal efforts to acquire and apply knowledge.

✧ Encourages expansion and learning across all models of knowledge.
Knowledge Leadership

• Use MIS and technologies that make nursing knowledge visible and available for clinical and administrative decision making.

• Encourage the development of communities of practice.
Communities of Practice

Groups of people who share a passion for something they know how to do and who interact regularly to learn how to do it better.

A quick start up guide.
Knowledge Work Questions

• What concepts, tools, techniques are most useful?
• How can information be used?
• Why is information important?
• Why care about the information?