National Nursing Informatics Deep Dive Program

Developing a Framework for Teaching Nursing Informatics

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Objectives

• Discuss three levels of practice data and relationships between and among the levels for past, present, and future nursing knowledge work.

• Discuss the relationships between and among the levels of the knowledge complexity archetype and the teaching-learning consequences for informatics in nursing curriculums.
Objectives

• Explore beliefs and values related to nursing knowledge work and the nine whys of nursing informatics.
Generations of Nursing Process

• 1950-1970  Problems to Process
• 1970-1990  Diagnoses and Reasoning
• 1990-2010  Outcome Specification/Testing
• 2010-2030  Knowledge Modeling
• 2030-2050  Prescriptive Nursing
• 2050-2070  Predictive Nursing


Representation and Reasoning

- International Classification Nursing Practice (ICNP)
- Unified Medical Language System (ULMS)
- Nursing Problem List Subset Snow Med CT
- CMS Measurement Management Blue Print
- Standardized Terminologies
- Federal Health IT Strategic Plan 2015-2010
NURSING PRACTICE DATA: THREE LEVELS

INDIVIDUAL LEVEL

Clinical Nursing Knowledge
Nurse’s Clinical Decision Making
Patient’s Data Documented

UNIT/ORGANIZATIONAL LEVEL

Patient Demographics
Financial Management Data
Health Care Facility Data
Health Profession Team Data
Nursing Management Data

NETWORK/STATE/COUNTRY LEVEL

Network: Examples
• Kaiser Permanente
• United Health Care Corp.
• Humana, Inc.

State Data Sets: Examples
• Iowa’s Community Health Management Information Systems (CHMIS)

National Data Sets: Examples
• Uniform Hosp. Discharge Data Set (UHDDS)
• Ambulatory Care Minimum Data Set
• Long-Term Care Minimum Data Set

Reprinted with permission, Center for Nursing Classification and Clinical Effectiveness, 2015
The Future of Learning
Knowledge Complexity Framework

Knowledge Work

<table>
<thead>
<tr>
<th>Data</th>
<th>Information (Procedural)</th>
</tr>
</thead>
<tbody>
<tr>
<td>statistics, financial data, metrics</td>
<td>procedures, standards, user guides, specifications, regulations, audits, filing and classification, order processing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Knowledge (Functional)</th>
<th>Meaning (Managing)</th>
</tr>
</thead>
<tbody>
<tr>
<td>workflow planning, priorities, graphs, engineering, historical data, tracking, database design &amp; management</td>
<td>business plans, goals, objectives, budgets, resources, roles, culture, managing variables, developing projects</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Philosophy (Systems)</th>
<th>Wisdom (Renewing)</th>
</tr>
</thead>
<tbody>
<tr>
<td>strategic planning, systemic mapping, competitive analysis, market forecasts</td>
<td>values, vision, future trends</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Union</th>
</tr>
</thead>
<tbody>
<tr>
<td>social, environmental &amp; global issues, activism, ecological values work</td>
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</tbody>
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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>Union (co-creating)</td>
<td>Sustainability (greater good)</td>
<td></td>
</tr>
</tbody>
</table>
Leadership, Vision, Action, and Logical Levels

Dilts, R. (2014) A brief history of logical levels
The Fourth Paradigm

1. Experiment & Measurement
2. Analytical Theory
3. Numerical Simulations
4. Data Intensive Computing

Data fusion + data mining + synthesis/learning + explanation

What is Big Data?
Federal Health IT Strategic Plan
2015-2020

• Focus on value.
• Respect individual preferences.
• Build a culture of electronic health information access and use.
• Create an environment of continuous learning and improvement.
• Encourage innovation and competition.
• Be a worthy steward of the country’s money and trust.
Transforming Health Care
Health Analytics

- Health Care Information and Management Systems Society
- Nursing Informatics
- epatient 2015
- Guiding Principles for Big Data in Nursing
- Designing Usable Clinical Information Systems
- The Value of Analytics in Health Care
- University of Minnesota Center for Informatics Big Data Conferences
Analytics

• Descriptive: What is happening?
• Diagnostic: Why did it happen?
• Predictive: What is likely to happen?
• Prescriptive: What should I do about it?

The Power of Why
Two Attributes of a Powerful Purpose

- A personal touchstone for you as an individual
- Fundamental justification for the existence of your work to the larger community

Henri Lipmanowicz & Keith McCandless (2013) 
The Surprising Power of Liberating Structures.

A powerful purpose attracts participation, including and unleashing everyone
Ask, why is informatics important for nursing knowledge work and what nurses do?

- Why is it important to you?
- First answer, “______…..”
  Hmm, why is *that* important to you?
- Second answer, “______…..”
  OK, if your dream came true last night, what would be different today?

Keep asking, “*Why*… *why*… *why*… until you make a discovery about your partner’s *bedrock* purpose. Use active listen skills. Then switch roles.

Move to a group of four. Discuss similarities and differences. A community Purpose may materialize!

1-2-4-All schedule:

- 1 minute quiet reflection, generating an activities list
- 10 minutes in a pair (asking why-why-why questions), 5 minutes each
- 5 minutes in a small group (4), then,
- 4 minutes debriefing, “What happened?” Did a community purpose emerge in your conversation?
Knowledge Work Questions

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