Transforming Data Into Practice
The Novice to Expert/Data to Wisdom Continuum

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Outline
- Novice - Expert
- Metastructures of Nursing Informatics
- Using These Concepts to Build your Expertise

Novice - Expert
Two views

Novice to Expert

- Novice
- Advanced beginner
- Competent (2 to 3 yrs)
- Proficient
- Expert (7 to 10 yrs)

Novice versus Expert

- Follows the rules
- Uses basic principles
- Can anticipate and plan
- Can see the big picture
- Intuitive grasp – knows what to do but cannot explain why

Novice vs. Expert

- Exposed expert and novice chess players to chess boards taken from actual chess games for 5 to 10 seconds.
Findings:
Experts: Place 90% of the pieces correctly. Novice: Placed 20% of the pieces correctly.
They can see the big picture - Chunking Miller’s 7 ± or – 2

Metastructure
Metastructure refers to the overarching framework which supplies rules regarding the relationship between meanings on the page.

Metastructure
“are overarching concepts used in theory and science.”
Scope and Standards of Practice P. 3
Metastructures of Nursing Informatics

- Data
- Information
- Knowledge
- Wisdom

Modified from Englebardt, S. Nelson, R. Health Care Informatics: An Interdisciplinary Approach, Copyright (2002), Figure 1-4, page 13 with permission from Elsevier.

The Relationship of Data, Information, Knowledge and Wisdom

Increasing Complexity

Constant flux

Wisdom
Understanding, applying with compassion

Knowledge
Interpreting, integrating, understanding

Information
Organizing, interpreting

Data
Naming, collecting and organizing

Increasing Interactions and Inter-relationships

Data Datum

Numbers, characters and images.

Uninterpreted observations and measurements made about the world.

The atomic data in a database.
Data are:

- 120
- 136/87

Data Attributes

- What are the data names?
- What are the data attributes?
  - Descriptive
  - Measurable

Data Questions

- Who owns data names?
- What about copy forward of data?
- How does that work within disciplines – between disciplines?
Nursing Data Issues

- Nursing assessment formats are for the most part data collection forms.
- Do they collect the data that can drive evidence-based nursing practice?

Information

Processed data that contains meaning.

A completed nursing assessment contains a great deal of information?

Information Attributes

- Quantifiable
- Verifiable
- Accessible
- Free from bias
- Comprehensive
- Clear
- Appropriate
- Timely
- Precise
- Accurate
Processing Data

There are well developed procedures for developing numeric and alpha numeric data. Processing whole text data is not well developed.

Relationship Between Data and Information

- First you diagnosis and then you treat.
- A diagnosis is information.
- What data can be used to build a nursing diagnosis.

- A rose by any other name is still a rose.
- How many names do we have for the same nursing diagnosis?
  http://nursingworld.org/npii/terminologies.htm
  http://nursingworld.org/npii/relationship.htm
Knowledge

Knowledge results when data and information are identified and the relationships between the data and information are formalized. A knowledge base is more than the sum of the data and information pieces in that knowledge base.

What do you remember?

- From your days as a student?
- What did you forget?

Knowledge Attributes

- Accurate
- Relevant
- Quality
- Type
  - empirical
  - ethical
  - personal
  - aesthetic
Decision Support Systems
- Are rule-based systems that are able to automatically provide solutions to repetitive problems.
- Clinical DSSs are typically designed to integrate a knowledge base, patient data and an inference engine to generate case specific advice. 
  http://www.openclinical.org/dss.html

Let's Talk:
- How will these types of systems impact what happens at the bedside:

Yesterday’s Knowledge
What do we know that is not true?
Mental Health

“Epileptics are selfish, self-centered, desire to have their way, easily annoyed, irritable, overbearing and conceited.”

Nursing Mental Diseases. Second Edition by Harriet Bailey, RN. 1933

Ethics

“… when one of the family is ill in or out of the hospital. The anxious women are forced to relay upon the honor and goodwill of the nurse not to take advantage of an enforced intimacy with the sons, husbands and brothers.”

Ethics : A Textbook for Nurses . 2nd edition by Mary E. Gladwin, RN, PhD, LLD 1930.

Diet

How many changes have you seen in the recommended diet for healthy living?
Wisdom

Knowing when and how to use knowledge in the process of caring for people.

It is the judicious and purposeful application of knowledge.

Digital Wisdom

- Using technology to enhance one’s analysis in making a decision.
- The appropriate use of technology in supporting one’s decisions.

The Informatics Question:
- Healthcare delivery systems include both the technology and the people who interface with the technology.
- These are complex systems with poorly defined problems.
- How can the data to wisdom continuum be used to design and implement systems that lead to cost effective quality care?
So what - Why would you care?

- In terms of your own development?
- In terms of the systems you will design and implement?