Information Alchemy: Transforming Data and Information into Knowledge and Wisdom

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One of the key conceptual models of the information field is the "information spectrum," the hierarchy of data - information - knowledge - wisdom.

I first learned this model from Bob Taylor, former dean of the Syracuse University School of Information Studies, and it is explained in his book, *Value-Added Processes in Information Systems*, Ablex, 1986, as the "Value-Added Spectrum," (p. 6).

I teach this model to almost all of my classes as part of developing an "information perspective" -- looking at the world through information-colored glasses.

This is the way I explain the information spectrum (sometimes referred to as the DIKW hierarchy):
- Data = characters, symbols, numbers, signs whose meaning may or may not be apparent.
- Information = data with labels or definition; data that has structure or relationships.
- Knowledge = collected, combined, organized, processed information for a purpose.
- Wisdom = knowledge over time; knowledge without thinking.

The transformation from information to knowledge has a special, almost magical quality to it. It's nearly tangible— that "aha" moment when things come together and you "get it." Take a moment to recall some "aha" moments. Think about what happened and also how you felt—enlightened, pleased, relieved, inspired, empowered…and more!

That moment—that "aha"—is the transformation from information to knowledge. Things (data and information) come together. Things suddenly makes sense, you see the pattern, you understand, you get it. You *know* something. And, along with knowing, comes a warm and wonderful feeling. Aha leads to ahhhhh, and you can't help but smile the smile of satisfaction.

That's because this movement up the spectrum from data and information to knowledge is what we constantly strive to accomplish. In problem-solving and decision-making, we want to take actions and make choices based on knowledge not just data or information. We want to comprehend the data, and gather, juxtapose, organize, and process the information so that we reach a higher level of understanding - one of knowledge or "knowing."

I've started calling this movement up the spectrum as "information alchemy" – turning data and information into knowledge (and someday, wisdom). The goal of traditional alchemy is to turn base materials into gold; to transform common lead or iron into valued gold. Information alchemy is similar— turning common data and information into valued knowledge. Knowledge is valuable and precious. Knowledge helps us to accomplish tasks, to make better choices, to be effective and successful in all types of human endeavor.

We observe and carry out information alchemy in many different settings and ways.

Education, for example, is a process of information alchemy by identifying what is worth knowing and then compiling and presenting data and information so that students gain the desired knowledge.

Information systems—books, libraries, the Web, Google, iPhone—are intended to provide access and add value to information so that people can become knowledgeable and use and share that knowledge.

Information alchemy appears to be a fundamental human activity and those of us in the information and education fields have unique responsibilities and opportunities to help students gain the critical information problem-solving skills and understandings required to turn data into information and then into knowledge that can be applied to complex and challenging real world problems.

I welcome your reactions, insights, questions and comments.

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