

Research information sharing... and information synthesis skills

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What is the sharing of research information?

When you share, you are letting others see your research work, use it, and build upon it.

Agenda

We will discuss:

1. The research practice of sharing research information
2. The model of research information sharing known as Open Access publishing
3. As a response to the increasing volumes of shared information, we will identify ways to develop “synthesis” skills (i.e., joining pieces of information together to create new ideas or new meaning)

Relevance

1. Look to free research works that may contribute to your academic, personal, and future professional life.
2. Developing information synthesis skills that may help you manage the increasing volume of information.

What does this genome sequencing race show us?

1. There are different approaches to scientific research - specifically, collaborate with different researchers to complete a massive project, or not.
2. There are different ways of dealing with research results. One of which is to publicly share your data and results.
3. Information technology has a powerful impact on research approach and the sharing of research results

Open access publishing

There is a model of research information sharing known as Open Access publishing.

Open access means the publishing of scholarly works that is:

- Digital and online
- Free of charge to the reader
- Free of most traditional copyright and licensing restrictions – so that readers and creators can re-distribute, remix, and reuse the content (so long as there is acknowledgement to the creator) (<http://www.earlham.edu/~peters/fos/overview.htm>)

Sample open access publications

There are prominent open access scientific publications. One is the Public Library of Science, which includes:

- PLoS One, <http://www.plosone.org>
- PLoS Biology, <http://www.plosbiology.org/>
- PLoS Medicine, <http://www.plosmedicine.org>

You can also find open access journal articles in the life and health sciences via:

- PubMed Central, <http://www.ncbi.nlm.nih.gov/pmc/>
- BioMed Central, <http://www.biomedcentral.com/>

To find an open access publication in your field, search the Directory of Open Access Journals

- DOAJ - <http://www.doaj.org/>

There are also open access databases of data.

- GenBank for genetic information, <http://www.ncbi.nlm.nih.gov/sites/gquery>
- PubChem for small molecule information, <http://pubchem.ncbi.nlm.nih.gov/>

Synthesis skills

With open access leading to the sharing of research publications at no cost to the reader, the volume of information available will grow and grow. Synthesis skills may help us cope.

- Gardner, Howard. Five minds for the future. Boston: Harvard Business School Press, 2006.

To paraphrase Gardner: Synthesizing is taking information from disparate sources, understanding and evaluating that information objectively, and putting it together in ways that make sense to you and to others.

Gardner argues that people crave coherence and integration, they want to make sense of information and put it to use.

Kinds of synthesis

Paraphrased below is Gardner's identification of the kinds of synthesis (2006).

Kind of synthesis	Definition	Example
Narratives	Weaving information into a coherent narrative. Telling a story.	Tolstoy's War and Peace - A social commentary, a work of fiction, and a historical chronicle about the Napoleonic era in Tsarist Russia all rolled into one.
Taxonomies	Categorizing items in terms of salient characteristics.	Linnaean classification of plants and animals and the periodic table of elements.
Complex concepts	Developing a new concept to blend or unify a range of phenomena.	Sigmund Freud developed the concept of the unconscious.
Rules and aphorisms	Capturing and conveying many ideas/wisdom through short phrases that are memorable and widely applicable.	Think first and act second
Powerful metaphors, images, and themes	Invoking metaphors to bring concepts to life.	For example: <ul style="list-style-type: none"> • Corporations create brands with words, graphics, and jingles. • Mashups - combining digital works to create a new work. For instance, PadMapper, which brings together Google Maps with apartment rental listings. http://www.padmapper.com/ • Information graphics are visual representations of information, data, or knowledge. http://www.infographicsshowcase.com/
Embodiments without words	Works of art that captures a lot of ideas	Consider Picasso's Guernica which tries to express the horror of the Spanish Civil War in a cubist-style mural
Theories	Joining concepts into a theory (i.e., a plausible explanation of phenomena)	Adam Smith's theory of a market economy weaves together ideas of supply and demand, labor, production, profit, and loss
Metatheory	Creating an overall framework for knowledge	George Wilhelm Friedrich Hegel developed the Hegelian dialectic "There are three stages in development: a thesis, giving rise to its reaction, an antithesis, which contradicts or negates the thesis, and the tension between the two being resolved by means of a synthesis" (i.e., "reconciliation and forming a new proposition"). (Wikipedia, 2010)

Cultivating synthesis skills

To develop these synthesis skills, Gardner (p. 155) recommends

- digesting new information (i.e., recognizing, learning, and understanding)
- organizing it
- applying the new knowledge in the ways outlined above.

Here is a college student example:

- In assignments, collect different types of information, and then organize them in a helpful manner. Experiment with visuals, layout, and organization.

And a professional example:

- At work, recognize new knowledge or skills that may be important to your field. Learn it and apply it.

Summary

- Sharing information and collaboration are important research practices to consider
- Open access publishing is a model for sharing research information
- With greater sharing, there will be a larger volume of information and knowledge available
- One response to this increasing volume of information is to develop synthesis skills for digesting, organizing, and applying new knowledge

References

Gardner, Howard. *Five Minds for the Future*. Boston: Harvard Business School Press, 2006.

Orr, H. Allen. "The Genetic Adventurer." A review of the book *A Life Decoded: My Genome: My Life* by J. Craig Venter. *The New York Review of Books*, March 20, 2008.