

## **Alternative Models of Knowledge Production: a Step Forward in Information Literacy as a Liberal Art**

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### **Introduction**

Bibliographic instruction has come a long way from the "library instruction" of the 20th century to the "information literacy" of the 21st. Its evolution from "finding your way in the library" to "gaining critical skills to function in the information age" is reflected through the increasing specialization of information literacy pedagogy in higher education. Information professionals' sustained interest in information literacy through various initiatives has led to the redefining of concepts like information, literacy, learning, thinking, and expertise in the context of education and converging technologies. Essentially, information literacy has advanced from a concept to a discipline that subsumes multiple literacies, multiple skills, and multiple competencies in a variety of contexts (Virkus 2003).

In contrast to its specialization, the breadth of the information literacy domain has remained remarkably small. Information literacy pedagogy as well as practice is still wedded to a template of what constitutes knowledge and knowing in formal academic setting. Exclusive references to peer-review and scholarly knowledge present a monolithic picture of the knowledge and information domains. It fails in presenting knowledge as being created as much outside the academia as within it. It is inadequate in showcasing the participation of various agencies and societies in the production of knowledge and hence does not support liberal learning objectives of deeper learning and understanding.

Shapiro and Hughes' idea of information literacy as a liberal art provides a useful framework for discussing of knowledge production other than the traditional academic model. In presenting various meta-messages about information and knowledge creation, alternative models not only

address the aforementioned shortcomings, they also address the socio-cultural issues of an inequitable information age, thereby bringing information literacy closer to the concerns of societies that are outside the "information age-knowledge society" paradigm.

### **Information Literacy and the Traditional Model of Knowledge Production**

Information literacy is a domain founded on the concepts of information, literacy, learning, research, and knowledge. Continuing discourse on the varying meanings of these concepts has led to the specialization of information literacy as a domain and an industry in its own right. Literacy is no longer restricted to reading and writing ; *computer literacy*, *network literacy*, *digital literacy*, *visual literacy*, *media literacy*, and *functional workplace literacy* are the literacy offspring of the new knowledge society and economy (Tyner 1998; Bawden 2001; Marcum 2002). Skills are no longer limited to library skills; they include *study skills*, *learning skills*, *communication skills*, and *ethical information use skills* ( [Fjallbrant and Malley 1984](#); Webber and Johnston 2002). Traditional ways of learning have given way to *interactive* learning and *problem-based* learning. Instruction, while incorporating these newer meanings and concepts, now provides a range--- general *stand-alone* and *resource-oriented* geared towards novices to *course-related*, *course-integrated*, *process-oriented*, and *disciplinary instruction* aimed at a specialized audience of budding researchers.

While meanings of most concepts have evolved, conception of knowledge has remained largely untouched within the information literacy domain. Set within the contexts of higher education and the creation of an organized workforce, information literacy functions within the traditional model of knowledge production and use. Gibbons (2000, 29) calls this model the ***disciplinary*** model as its practices and norms "have generated what we know as the disciplinary structure of science and this structure, in turn, has come to govern the management and organization of universities today." Central to this model is the scholar undergoing the process of peer-review in creating new knowledge. The scholar, identified as researcher, follows a set of ideas, values, methods and norms that define the research enterprise. After years of training in research practices, the researcher achieves adequate skills and expertise to participate in the creation of new knowledge. The mechanism of peer-review, whereby other experts in the field judge if the researcher's work merits publication, acts as a filter or quality control tool to the existing scholarly knowledge base.

The traditional model is largely implicit in information literacy practices of demonstrating what is scholarly and what is not, expounding academic honesty and, motivating undergraduates towards graduate education. While all these are valuable tasks in bringing students into the disciplinary framework of knowledge, exclusive focus on the traditional model is problematic for several reasons. For example, the linear and over-simplified trajectory of knowledge in scholarly communication does *not* reflect students' often messy experiences with research. It also fails to inform the huge difference between research process of scholars and students (Bodi 2002, 109). Instead it informs an "expert" who controls the production of knowledge and provides solutions to the problems from which he is far removed (Bensimon 2004).

Furthermore, the model's centrality in academia entails that "problems are set and solved within the context governed by the largely academic interests of a specific community" (Gibbons 1994, 3). It fails to convey the process of knowledge production as a continuous negotiation between different stakeholders in time and space, its production contingent on the fulfillment of interests of various actors (Gibbons 2000, 31). Not only does the participation of various societies, peoples, and agencies outside of academia and outside the western world stays unacknowledged, the traditional model's close association to science and scientific knowledge in fact invalidates it. According to Gibbons (2000, 30), the socio-cognitive norms followed in the production, legitimation and diffusion of disciplinary knowledge relates to a distinct form of knowledge termed "scientific." These norms determine what constitutes significant problems, who shall be allowed to practice science and what constitutes good science. Furthermore, he notes that "forms of practice which adhere to these rules are by definition 'scientific' while those that violate them are not."

Students function not only in within their immediate environment, such as the library or the academia, but also within a larger society. Here, they come across as many meanings of knowledge, research, information, and truth as ways to achieve them. In analyzing overarching global concerns such as the environment and sustainability, overdevelopment and underdevelopment, affluence and poverty, technological advancement and lag, they need to think beyond the singularity of the disciplinary model and understand multiple knowledge traditions and issues arising at the sites where they meet and create conflict. They also need to understand global disparities in knowledge production and use as differences in epistemic practices of different cultures. In providing students a range of models we present them with the critical framework that:

*Knowledge is produced when people make sense of their world and knowledge is based on their experience as they construct tools, methods, and approaches to cope with the situations facing them. This meaning-making notion of knowledge production leads to an understanding of power imbalances in society (Hill 1998, 4)*

Supplementing academic production of knowledge with the social production of knowledge opens students to more critical questions like:

*Whose knowledge are we studying? Why? Is there an official knowledge ? Why?*

*Are some people privileged by the knowledge we study? If so, who? If knowledge is socially produced, am I a producer or consumer? Why? If knowledge is affected by the socially constructed culture and the context from which it arose, then whose culture is being celebrated? If social knowledge is not objective, then how does that affect the way we conduct research? If objectivity is not the only way of knowing, in what other ways can we know? (Cunningham 1993, 11)*

While on one hand the alternatives compel critical analysis and choice, on the other they also impart students with a sense of the interdependence of different knowledge traditions and a space for reconciling traditional and modern, local and global, particular and universal knowledge.

### **A Few Alternative Models of Knowledge Production**

Van der Linde (2001) outlines the two models that do away with "the reductionism and linearity inherent to emphasis on usefulness and marketability [in marketplace models]." Characterized as open-ended, provisional, speculative, fragmentary, playful and taking unforeseen and unpredictable directions, the outputs of **the network model** do not lack in use, scientific credibility, logical coherence and rigorous argument---any of the qualities that typify the traditional model. The focus is on the participant's nonconformism and ingenuity, and the manner in which the value of his output is judged. Van der Linde depicts the knowledge landscape as:

*These outputs are not strictly bound by respect for disciplinary boundaries and often do not easily fit the parameters dictated by existing game rules. This is the domain of nomadic wanderers in the knowledge landscape, of encyclopaedic writers who treat the universe of knowledge as a giant*

*intertext, of intellectual mavericks. The value of their outputs is not measured in terms of usefulness or credibility amongst peers but in terms of richness of implications, of the capacity to generate connections among disparate elements, of freshness of insights and scope (p. 58).*

Relating the participants within this model to Jankelevitch's idea of the ironist, he writes:

*his model is not directed towards providing answers and solving problems, but towards raising questions and generating new problems. It offers a home for the ironist, always ready both to maintain and undermine a position, never to be tied down (Jankelevitch 1979, 30-37).*

Although Van der Linde does not provide specific examples for this model, on a closer look it maps well with the domain of critical pedagogy that draws on feminism, postcolonialism, marxism, discourse theories of Edward Said, Antonio Gramsci and Michel Foucault.

**The narrative model**, on the other hand, differs from the traditional and network models in its accommodation of as many alternative positions as possible. For example, the naïve and the religious complement the scientific position. The focus here is to make sense by collecting as many viewpoints as possible and avoid hierarchy between them. As is obvious from its label, the medium is the narrative, using texts originating in mythology, history, and literature and, giving rise to outputs that are based on the game rules of the field it originated from and the kind of narrative used. The remarkable aspect of this model lies in the possible richness and variations in content:

*The knowledge content of an output can be clearly defined, as in historiography, or somewhat varied and unpredictable, as in the case of literary narratives, where only a small proportion of the knowledge content is directly communicated and immediately apparent, while most of it is generated through the interaction between text and reader, with the result that different readers will generate different knowledge contents through readings of the same text(p. 59).*

A sense of community and its cultural particularity is established as "knowledge is here defined as a set of statements or beliefs which a particular community formulates in response to its *Umwelt*, and which it accepts as truthful, after coming to an agreement that sufficient objective grounds exist for such acceptance to be reasonable" (Gill 1985).

Although the traditional model's structure and methods are based in science, it does not reflect the rapidly changing research landscape in the sciences. Gibbons' (1994) **Mode 2 model** of knowledge production mirrors the changes in research practices in the domains of biotechnology, materials science, and microelectronics. Not only does this model accommodate the commodification of research, commercial stakeholder interests, the involvement of social movements, activists and NGOs in the three disciplines, it also shows the fluidity of communication patterns and organizational structures in the context of globalization and the internationalization of research. Gibbons characterizes it on five points: knowledge produced in the context of application, transdisciplinarity, heterogeneity and organizational diversity, enhanced social accountability and, a more broadly based system of control. While Gibbons contrasts each aspect with its counterpart in the disciplinary mode (also referred to as Mode 1), the "knowledge produced in the context of application" stands out. He explains:

*In the former [disciplinary mode], the context is defined relation to the cognitive, and social norms that govern basic research or academic science. Latterly, this has tended to imply knowledge production carried out in the absence of some practical goal. In Mode 2, by contrast, knowledge results from a broader range of considerations. Such knowledge is intended to be useful to someone, whether in industry, government, or society more generally and this imperative is present right from the beginning. Knowledge thus produced is always produced under an aspect of continuous negotiation, i.e. it will not be produced unless and until the interests of the various actors are included. Such is the context of application (p.31).*

Clearly, there are many more alternatives to the traditional disciplinary mode of knowledge production offering more insights to newer meanings of research, information and, knowledge. We need to actively seek them and incorporate them to balance the depth and specialization of information literacy. Moreover, the advantages are not limited to information literacy; our understanding of specific disciplinary research practices through these models can also help shape a more effective outreach towards "difficult to reach" disciplines such as applied sciences and engineering.

### **Considerations for Practice**

If the traditional model governs a large part of what we do as information literacy instructors then why should we question its exclusiveness? A simple answer is---because we are committed to learning.

A few have already called attention to the fact that information literacy, right from its inception, has been central to the *learning* process (Marcum 2002). The learning process, in a learning institution, is essentially a gateway to the universe. Liberal learning, forming a key part of undergraduate education, embodies this fact. For example, the liberal learning program at the author's institution calls for "deep learning and understanding of the ways race, ethnicity, and gender have shaped local and global communities." Knowledge and information can become the additional facets for inquiry.

On a fundamental level, we need to reconsider exclusive reference to the traditional model because of the fact that libraries embody the "public sphere" (Buschman, 2003). Jürgen Habermas conceived the idea of public sphere as space outside of the state and market where opinions, information, and knowledge are exchanged. While his work relates its existence in eighteenth-century bourgeoisie, it is safe to assume its presence in different communities in different forms. By providing access to a knowledge repository based on an understanding of what is scholarly and what is not, we provide certain entities legitimacy and power to engage in the public sphere while excluding others. As a result we limit the libraries' objective of inclusiveness and reproduce the very inequities they strive to wipe out. By broadening information literacy, we can facilitate the participation of a citizenry that speaks from a variety of knowledge bases reflecting a more democratic society.

Shapiro and Hughes (1996) provide a framework that is useful to the task of broadening information literacy. Adopted by ACRL's "Information Literacy for Faculty and Administrators" (Kirk, under "What is information literacy"), they expand the definition of information literacy as a "liberal art" as opposed to information literacy as a cluster of skills. It is "the critical reflection on the nature of information itself, its technical infrastructure and its social, cultural and even philosophical context and impact." A major portion of this learning is "socio-structural" viz., knowing how information fits into life groups and the social processes through which it is generated. A corresponding curricular framework that supports the broadened information literacy is the one:

*that equips people not only with a bunch of technical skills but with a broad, integrated and critical perspective on the contemporary world of knowledge and information, including its origins and developmental trends, its redefinitions of experience and social life, its philosophical justification, biases and limits, its potential for human emancipation and human domination, and for growth and destruction.*

How does this expanded notion of information literacy translate into to a classroom setting? For example, in a transformed information literacy class on intellectual property, we (librarian in collaboration with the teacher) may not only cover the use of copyrighted materials and academic integrity but also extend the understanding of how different notions of innovation, knowledge, and ownership inform intellectual property in a globalized economy. In the industrialized nations, innovation is related to formal systems such as the university or R&D laboratories , whereas in developing nations innovation also constitutes informal traditional systems of knowledge of grassroots innovators such as farmers, artisans, indigenous people, and tribes (Mashelkar 2001). What are the cultural values embedded in notions of western scientific knowledge, private ownership, and individual innovation? How do they shape the economics of community knowledge of indigenous people? What are the concerns of societies that do not measure up to the "normal" conceptions of research and knowledge?

Through socio-economic, technological, and political understanding of intellectual property in the context of globalization we may lead students to question evaluation of information against a standard given measure. More importantly, this macro-analysis may prompt them to micro-analyze their own conceptions of research and knowledge. We could take this opportunity to contextualize academic research within the larger knowledge universe. Finally, in informing a complex knowledge universe, we may be able to convey to them the necessity of skills to deal with these complexities and the meaning of lifelong learning.

## **Conclusion**

Shapiro & Hughes' idea of information literacy as a liberal art provides a framework to overcome the shortcomings of the traditional model of knowledge production and the emphasis on the role of scholar-expert and the mechanism of peer-review. In supplementing the traditional model with alternative models of knowledge production we can depict a varied landscape of information and knowledge. By informing complexities of various knowledge domains, these models facilitate critical inquiry into multiple ways of thinking, learning, reasoning and arriving at "the truth".

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