

## **Pillars of Institutional Pedagogy: Ten Principles for the Future of Learning**

We suggest that the following ten principles are foundational to rethinking the future of learning institutions.<sup>24</sup> We see these principles as riders, both as challenges and as the general grounds on which to develop creative learning practices, both transformative and transforming as new challenges emerge and new technological possibilities are fashioned.

### **1. Self-Learning**

Self-learning has bloomed; discovering online possibilities is a skill now developed from early childhood through advanced adult life. Even online reading, as Alan Liu reminds us, has become collaborative, interactive, nonlinear and relational, engaging multiple voices.<sup>25</sup> We browse, scan, connect in mid-paragraph if not mid-sentence to related material, look up information relevant or related to what we are reading. Sometimes this mode of relational reading might draw us completely away from the original text, hypertextually streaming us into completely new threads and pathways across the information

highways and byways. It is not for nothing that the Internet is called the “Web,” sometimes resembling a maze but more often than not serving as a productive if complex and challenging switchboard.

## **2. Horizontal Structures**

Relatedly, an increasingly horizontal structure of learning puts pressure on how learning institutions—schools, colleges, universities, and their surrounding support apparatuses—enable learning. Institutional education has tended to be authoritative, top-down, standardized, and predicated on individuated assessment measured on standard tests. Increasingly today, work regimes involve collaboration with colleagues in teams. Multi-tasking and overlapping but not discrete strengths and skills reinforce capacities to work around problems, work out solutions, and work together to complete projects. Given the range and volume of information available and the ubiquity of access to information sources and resources, learning strategy shifts from a focus on information as such to judgment concerning reliable information, from memorizing information to how to find reliable sources. In short, from learning *that* to learning *how*, from content to process.

## **3. From Presumed Authority to Collective Credibility**

Learning is shifting from issues of authoritativeness to issues of credibility. A major part of the future of learning is in developing methods, often communal, for distinguishing good knowl-

edge sources from those that are questionable. Increasingly, learning is about how to make wise choices—epistemologically, methodologically, concerning productive collaborative partnerships to broach complex challenges and problems. Learning increasingly concerns not only how to resolve issues regarding information architecture, interoperability and compatibility, scalability and sustainability, but also how to address ethical dilemmas. It concerns, in addition, issues of judgment in resolving tensions between different points of view in increasingly interdisciplinary environments. We find ourselves increasingly being moved to interdisciplinary and collaborative knowledge-creating and learning environments in order to address objects of analysis and research problems that are multidimensional and complex, and the resolution of which cannot be fashioned by any single discipline. Knowledge formation and learning today thus pose more acute challenges of trust. If older, more traditional learning environments were about trusting knowledge authorities or certified experts, that model can no longer withstand the growing complexities—the relational constitution of knowledge domains and the problems they pose.

#### **4. A De-Centered Pedagogy**

In secondary schools and higher education, many administrators and individual teachers have been moved to limit use of collectively and collaboratively crafted knowledge sources, most notably Wikipedia, for course assignments or to issue quite stringent guidelines for their consultation and reference.<sup>26</sup> This is a catastrophically anti-intellectual reaction to a knowledge-making, global phenomenon of epic proportions.

To ban sources such as Wikipedia is to miss the importance of a collaborative, knowledge-making impulse in humans who are willing to contribute, correct, and collect information without remuneration: by definition, this *is* education. To miss how much such collaborative, participatory learning underscores the foundations of learning is defeatist, unimaginative, even self-destructive.<sup>27</sup>

Instead, leaders at learning institutions need to adopt a more inductive, collective pedagogy that takes advantage of our era. John Seely Brown has noted that it took professional astronomers many years to realize that the benefits to their field of having tens of thousands of amateur stargazers reporting on celestial activity far outweighed the disadvantages of unreliability. This was a colossal observation, given that among the cohort of amateur astronomers were some who believed it was their duty to save the earth from Martians. In other words, professional astronomers had large issues of credibility that had to be counterpoised to the compelling issue of wanting to expand the knowledge base of observed celestial activity. In the end, it was thought that “kooks” would be sorted out through Web 2.0 participatory and corrective learning. The result has been a far greater knowledge, amassed in this participatory method, than anyone had ever dreamed possible, balanced by collective and professional procedures for sorting through the data for obviously wrong or misguided reportings. If professional astronomers can adopt such a de-centered method for assembling information, certainly college and high school teachers can develop a pedagogical method also based on collective checking, inquisitive skepticism, and group assessment.<sup>28</sup>

## 5. Networked Learning

Socially networked collaborative learning extends some of the most established practices, virtues, and dispositional habits of individualized learning. These include taking turns in speaking, posing questions, listening to and hearing others out. Networked learning, however, goes beyond these conversational rules to include correcting others, being open to being corrected oneself, and working together to fashion workarounds when straightforward solutions to problems or learning challenges are not forthcoming. It is not that individualized learning cannot end up encouraging such habits and practices. But they are not natural to individual learning, which leans on a social framework that stresses competition and hierarchy rather than cooperation, partnering, and mediation. If individualized learning is chained to a social vision prompted by “prisoner dilemma” rationality in which one cooperates only if it maximizes narrow self-interest, networked learning is committed to a vision of the social stressing cooperation, interactivity, mutuality, and social engagement for their own sakes and for the powerful productivity to which it more often than not leads. The power of ten working interactively will almost invariably outstrip the power of one looking to beat out the other nine.

## 6. Open Source Education

Networked learning is predicated on and deeply interwoven into the fabric of open source culture.<sup>29</sup> Open source culture seeks to share openly and freely in the creation of culture, in its

production processes, and in its product, its content. It looks to have its processes and products improved through the contributions of others by being made freely available to all. If individualized learning is largely tethered to a social regime of copyright-protected intellectual property and privatized ownership, networked learning is committed in the end to an open source and open content social regime. Individualized learning tends overwhelmingly to be hierarchical: one learns from the teacher or expert, on the basis overwhelmingly of copyright-protected publications bearing the current status of knowledge. Networked learning is at least peer-to-peer and more robustly many-to-many.

In some circumstances, where resources are unevenly distributed, the network operates according to what we call a *many-to-multitudes model*. That is, a group that has access to resources sustains and supports the infrastructure required to engage in what are equitable *intellectual* exchanges with those who do not have the financial resources to sustain digital connection. Many international social movements—such as those focused on Darfur or Tibet—operate from this many-to-multitudes interactivity where financial resources on one end are balanced by local expertise and human investment and labor on the other for interchanges that are rich and socially valuable for all participants. Many-to-multitudes does not erase the digital divide but, rather, acknowledges its material reality and provides a more collective model of capital (monetary capital and human capital) to promote interchange. The desire (on all sides) for interactivity fuels this digitally driven form of social networking, as much in learning as in economic practices. It provides

the circuits and nodes, the combustion energy and driving force for engaged and sustained innovative activity, sparking creativity, extending the circulation of ideas and practices, making available the test sites for innovative developments, even the laboratory for the valuable if sometimes painful lessons to be learned from failure.

### 7. Learning as Connectivity and Interactivity

The connectivities and interactivities made possible by digitally enabled social networking in its best outcomes produce learning ensembles in which the members both support and sustain, elicit from and expand on each other's learning inputs, contributions, and products. Challenges are not simply individually faced frustrations, Promethean mountains to climb alone, but mutually shared, to be redefined, solved, resolved, or worked around—together.

An application such as Live Mesh allows one to unite and synchronize one's entire range of devices and applications into a seamless web of interactivity. It enables instantaneous file- and data-sharing with other users with whom the user is remotely connected, thus allowing at least potentially for seamless and more or less instant communication across work and recreational environments. Our technological architecture thus is fast making *net-working*—in contrast with isolated, individualized working—the default. Slower to adapt, the organizational architecture of our educational institutions and pedagogical delivery are just starting to catch on and catch up.

## 8. Lifelong Learning

It has become obvious that from the point of view of participatory learning there is no finality. *Learning is lifelong*. It is lifelong not simply in the Socratic sense of it taking that long to realize that the more one knows the more one realizes how little one knows. It is lifelong in the sense also, perhaps anti-Platonically, that the increasingly rapid changes in the world's makeup mean that we must necessarily learn anew, acquiring new knowledge to face up to the challenges of novel conditions as we bear with us the lessons of adaptability, of applying lessons to unprecedented situations and challenges. It is not just that economic prospects demand it; increasingly "our" sociality and culture now do, too.

It remains an open question still whether connected, open source, interactive, networked, horizontal, lifelong learning will have a transformative epistemological impact on what we learn at our educational institutions. But what is certain is that the pedagogical changes we have enumerated have radically changed *how* we know how we *know*.<sup>30</sup>

## 9. Learning Institutions as Mobilizing Networks

Collaborative, networked learning alters also how we think about learning *institutions*, and network culture about how to conceive of institutions more generally. Traditionally, institutions have been thought about in terms of rules, regulations, norms governing interactivity, production, and distribution within the institutional structure. Network culture and



associated learning practices and arrangements suggest that we think of institutions, especially those promoting learning, as mobilizing networks. The networks enable a mobilizing that stresses flexibility, interactivity, and outcome. And the mobilizing in turn encourages and enables networking interactivity that lasts as long as it is productive, opening up or giving way to new interacting networks as older ones ossify or newly emergent ones signal new possibilities. Institutional culture thus shifts from the weighty to the light, from the assertive to the enabling. With this new formation of institutional understanding and practice, the challenges we face concern such considerations as reliability and predictability alongside flexibility and innovation.

### **10. Flexible Scalability and Simulation**

Networked learning both facilitates and must remain open to various scales of learning possibility, from the small and local to the widest and most far-reaching constituencies capable of productively contributing to a domain, subject matter, knowledge formation and creation. New technologies allow for small groups whose members are at physical distance to each other to learn collaboratively together and from each other; but they also enable larger, more anonymous yet equally productive interactions. They make it possible, through virtual simulations, to learn about large-scale processes, life systems, and social structures without either having to observe or recreate them in real life. The scale will be driven by the nature of the project or knowledge base, ranging from a small group of students work-

ing on a specific topic together to open-ended and open-sourced contributions to the Encyclopedia of Life or to Wikipedia. Learning institutions must be open to flexibility of scale at both ends of the spectrum, devising ways of acknowledging and rewarding appropriate participation in and contributions to such collective and collaborative efforts rather than too quickly dismissing them as easy or secondary or insufficiently individualistic to warrant merit.