

# Education in the Network: Knowledge Flows and Learning Nodes

Pithamber R. Polsani  
Assistant Professor  
Department of Spanish & Portuguese  
&  
Faculty Fellow  
Faculty Center for Instructional Innovation  
The University of Arizona  
*polsani@email.arizona.edu*

## ABSTARCT

The ubiquity of information technology is profoundly altering the social formations that arose in the wake of the industrial revolution. These changes are result of 1) emergence of communication and computing technologies and 2) transformation of industrial appliances into information systems. These reconfigurations in the machines and societies—some visible and many invisible—are giving rise to a new Network Society whose key force of production is the information and the computer networks the means. For the first time in the history of human development the means of production and the forces of production are becoming one entity. Consequently, the network is emerging as the architecture for conducting business transactions, social interactions and individual communications. Education too is being displaced from its traditional confines of institutions to a generalized form of learning that can take place anytime and anyplace. In this regard, E-learning and M-learning have become the preferred means of characterizing digital mode of education wherein the information technologies play a decisive role. However, I believe that the terms E-learning and M-learning are too restrictive to adequately characterize the new forms of learning because they refer either to the delivery format of content (electronic) or the access devices (PDA). Because of “delivery-device” framework, E-learning and M-learning came to be thought as instances of traditional distance learning. This thinking has given rise to content and pedagogy for E-learning that is still informed by the traditional teacher-student paradigm. A more appropriate way to define the emerging educational process would be Network Learning or N-learning since both, E-learning as well as M-learning, are located in the global network of computers.

*The Network Learning can be defined as a form of education whose site of production, circulation and consumption is the network.*

In this paper, my purpose is to offer a theoretical formulations and practical mechanisms of Network Learning that mirror the flexible, adaptable and scalable conditions of the network. Furthermore, I will argue that knowledge (the content of learning) has undergone a conceptual change in last fifty years resulting in performatively judged “knowledge-events” whose fundamental character is Flow. My argument here will focus on three critical issues pertinent to the topic under consideration: 1) Network Society, an emergent global social formation; 2) Performative Knowledge, the contemporary conditions of knowledge, and 3) Reusable Learning Objects, an efficient and flexible form of structuring content for N-Learning. As my argument progresses I will lay out a grid with four layers: Form, Condition, Criteria and Space. The grid will unfold in three stages and at each stage; I will summarize the key elements of three critical issues and arrange them into the four layers of the grid. The objective of this exercise is 1) to demonstrate the affinity between the conditions of Network Society, Performative Knowledge and Reusable Learning Objects and 2) argue for the need to think about the structure and operation of N-learning in a radically new way.

## Network Society

A commonly held misconception about computers and the Internet is that they are tools. As a result of this general view about information technology it is positioned on the same level as other tools of instruction, such as overhead projectors, audio recorders, VCRs etc. A tool is an instrument or a vehicle for facilitating an action, which, without the tool would require considerable effort and energy. Globally networked computers, on the other hand, have created a new space: the Information Sphere. Learning, knowledge

explorations or skill acquisitions are actions performed with the help of intelligent software tools in the Information Sphere. Although I use the term “tool” to characterize software it is unlike other instruments, which produce or facilitate actions other than the material they are made of. More adequate categorization would be to call software a collection of symbolic arguments. Unlike traditional tools, the symbolic assemblages (software) are applied to production of other symbolic groupings. Therefore, the knowledge production in the Information Sphere is the application of knowledge for further knowledge. Since this space—the site of production, circulation and consumption—is unique and radically new, the learning and knowledge actions cannot be identical or similar to the actions performed in the physical space. On the contrary, we have to create new notions of knowledge and learning.

The information sphere brought about by the information and communication technologies is emerging as a vital component of society, transforming it rapidly into a global Network Society wherein knowledge becomes the critical productive force. The final configuration of the Network Society is still unknown to us, but certain trajectories have been opened by the information technology, and it is along these paths that society is traversing, opening lines of thought for us.

The globally connected network of computers is fast becoming the nervous system of an emerging social formation. The network increasingly mediates business transactions, social interactions, political organization, private pleasures and public entertainments. The architectonics of this network is rhizomic. Like the rhizome, the networked system of computers is a non-hierarchical space. In this space, each point is connected to the other with a multiplicity of connections; the connections have precedence over the points they connect. Because of this multiplicity of relations, the rhizomic network is indestructible. If a point ruptures instead of collapsing or affecting the whole network, it will continue through other connections. Cartographically laid out, the network has many entry points and, like a map can be read from any point or entered from any location. The unconstrained flexibility, unlimited scalability and the surface density gives the rhizomic network its attraction, enduring power and its capacity to diffuse into every aspect of human activity altering its very nature. Education as an important component for the well-being and growth of societies is permanently drawn into it. Therefore, educators have to urgently rethink questions such as, what is education? How is it produced? And, how is it transmitted? Because the very foundation of N-learning is a nonhierarchical and decentered rhizome, the

content development, instructional design, and mechanisms of assessment have to be thought anew.

Historically the social space was linked to geographical space organized as territories-regions, nations and continents. The power and gender relations that brought in social, sexual and economic differentiations determined the internal order of these territorial spaces. The Network Society transcends national and regional boundaries deterritorialising them and reterritorialising them into Localities and Globalities. The major cause of this transformation is the penetration of the Information Sphere into all dimensions of life. The information space is a temporalized space, wherein the moments in time, measured as Global Real-Time, create differentiated time-bound spaces. Since the network erases the differentiation between here and there, institutions are being transformed from vertically integrated, spatially located, hierarchically organized structures into horizontally dispersed, independent modular units. The very culture and identity of individuals is being transformed from one that is linguistically and territorial constructed to one that is loosely defined by Localities and Globalities.

The lifeblood of rhizomic network is the information. As the information space is a temporalized space whose basic state is motion, the information is in constant flow. Continuously added, enhanced, transformed, exchanged and altered, the information ceases to be a product to be consumed, instead it is characterized by the fluidity of Flows that are constantly circulated. The nodes of the network are the access points for information flows, and the access point is where information space is revealed in the interface. The Interface Space is the arena of performative actions of individuals and information alike. This Interspace comes into existence only for the duration the node is activated.

## **Performative Knowledge**

Before the advent of the post-industrial age in the 1960s, Enlightenment and post-Enlightenment ideas determined the purpose and use of knowledge. The European Enlightenment defined the human being as a subject whose destiny is the realization of its full potentialities through reason. The goal of acquiring learning was the realization of spirit, life, and emancipation of humanity and the purpose of production of knowledge was the moral and spiritual guidance of a nation. Owing to this conceptualization of

knowledge, universities were not expected to be responsive to society's needs. However, in the contemporary conceptualization of knowledge, its purpose is no longer to realize spirit or emancipate humanity but *to add value to human abilities expressed as labor*. Since learning has value, its valuation is determined by its utility and exchange. Thus, *the criterion for judging knowledge is its performance*.

The legitimacy of performative knowledge is no longer granted by the grand narratives of emancipation, but by the market. The market should be understood as a grouping of various forces such as public policy, industrial complexes, the financial sector, technology, business modeling, and so on. The character of the market at any given time is determined by the configuration of dominant forces that participate in it. The market, unlike the narratives of emancipation and speculative spirit, which are valid for long durations, is in a constant flux shifting rapidly from one configuration to the other. As a result, the knowledge requirements imposed by the market are also altering expeditiously. The only thing that is constant with the market is change. *Therefore, education should be redefined as preparedness for change, and the knowledge acquired through education, performative*.

The performative criterion has transformed *the knowledge space* into a flexible, adaptable and scalable experience. Removed from its traditional confines, knowledge is shaped under varied circumstances and situations. The situational knowledge is produced as modular "knowledge events" that come together from various contexts to form "knowledge programs" according to performatively determined programmatic objectives. Conversely, the knowledge event's ability to adapt to diverse situations determines its performative abilities, either enhancing or decreasing it.

## Reusable Learning Objects

As the market requirements of learning are changing constantly, performative knowledge cannot be transmitted en block; instead, it should be arranged into up-to-date knowledge banks that can be accessed by individual learners. The traditional educational system, which is established in a geographical space with physical assets and which relies on the transportation of its participants, will not be able to live up to these new tasks. N-learning that is driven by information and communication technologies, which are inherently flexible and effective, is the appropriate form of knowledge production and circulation for the new reality of the market.

The architecture of N-learning should be conceptualized with two guiding principles: modularity

and the linkage system. The fundamental requirement for modular architecture and the linkage system is the separation of content from the instructional use of the content. The content should be created as discreet, self-standing modules that are predisposed for reuse in multiple contexts<sup>1</sup>. In this regard, we should borrow the notion of object and its structure from object oriented programming and adapts it creatively to the educational content. With the modular approach, we can bring greater efficiency into content development. The ideational value of the content should be well thought-out to adequately fulfill the requirements of performative knowledge, especially rapid adaptability to the changing configurations of market.

## Conclusion

The Network Learning can emerge as the most adequate form of knowledge production, circulation and consumption for the network Society provided that we establish it as an independent field by opening up its own space of operation, developing a coherent methodology and logical procedures for creating and delivering knowledge objects. As I have argued, the information sphere located in the global rhizomic network is the open space for the N-Learning. Consequently, the very structure, operation and methodological procedures, instead of being rigid hierarchical structures of traditional disciplines, should reflect the very topology of the network. The N-Learning in its form should be a vibrant learning ecology wherein the learner goes through a life-like interactive experience.

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<sup>1</sup> The Virtual Adaptive Learning Architecture being developed at Faculty Center for Instructional Innovation, University of Arizona, has taken this approach for creating content. The team is implementing a modular architecture and linkage system known as Reusable Learning Objects and Reusable Instructional Objects developed by this author.