

The First Conference of the i-School Community

*Bridging Disciplines to
Confront Grand Challenges*



*September 28-30, 2005
Information Sciences and Technology Building
Penn State University Park Campus*

What Every ISchool Student Should Know: Information as a Fundamental Construct

Robert B. Allen
Drexel University

We assert that information is a coherent construct around which the I-School curriculum should be built. Because I-Schools incorporate many conceptual and pedagogic traditions, there is often little coherence in the current curricula. A foundations course would a common base for students much as foundations courses do in more traditional disciplines ranging from economics to chemistry.

While we do not claim to have an exact definition of “information” it is certainly includes representation, structure, and description. These can be explored across content and media types. Structure can range from the structure of language (both text and speech) to music and cinema. Representation is fundamental for categorization, human information processing and learning systems (learning is a change of representation). Of course, representations can be stored and manipulated so – not surprisingly – content management and information architecture are integral to a foundations course. Indeed structure and representation are intertwined when considering documents, markup languages (e.g., XML), descriptive systems, and metadata as well as the manipulation of content for indexing and summarization.

These foundations, leads us to more complex, information-intensive activities such as problem solving, planning, and design for individuals, collaborative groups, and organizations. Information processing is fundamental to organizations. Thus, knowledge management -- the effective use of information in organizations – is a natural application. Similarly, an introduction to Information Systems, needs to be part of the foundation. While information systems are, of course, covered in B-School programs, a more general perspective – beyond business applications -- is needed. We propose a unified perspective that moves seamlessly from databases to search engines. The commonalities across what is often considered distinct fields can be seen in the similarity of architectures for repositories ranging from digital libraries (Fedora), to digital preservation (DSpace), to the management of science workflow (Kepler), to data warehouses. Naturally, a foundations course, needs to include the impact on a variety of stakeholders. On one hand we can consider end-user interaction; on the other hand, we can consider broader social impact with topics such as privacy and intellectual property.

This unified view of information and its applications allows us to examine the requirements of specific domains – for instance, the high-recall requirements of legal informatics or descriptions for a library of shapes to be used by mechanical engineers. Furthermore, while the conceptual overview is main goal of the proposed foundations course, we recognize the importance of developing specific skills and competencies such as object-oriented design, the design of descriptive systems, and the management of repositories.

Among the claims that should stimulate discussion are:

- There is a relatively small number of foundational constructs that unify the field and that identifying such constructs is a better way to characterize the field than surveys of the current offerings in ISchool programs.
- We have covered a wide range of topics, they are all closely inter-related and we propose a course that spends a few lessons on each. In other words that a foundations course is both feasible and desirable.
- Unlike computer science, which is generally modeled on natural science, the foundations of the ISchool curriculum are based in social science. Indeed, many of these themes can be traced directly to Herb Simon.