



DigCCurr Progress Report: Development of a Graduate-Level Digital Curation Curriculum

Christopher A. Lee, Carolyn Hank, Helen R. Tibbo

The Digital Curation Curriculum (DigCCurr) project (IMLS RE-05-06-0044) is developing a graduate-level curricular framework, course modules & experiential components to prepare students for digital curation professions in a variety of information environments. The two tables below summarize the contents of our two main conceptual products & tools for organizing our work. More detailed elaboration of the components & sources from which we've drawn will be available at the DigCCurr web site.

DigCCurr Research Activities:

- Extensive review & analysis of literature
- Interviews with 17 expert advisory board members
- Survey of participants in major international conference in April 2007
- Planned wider-scale survey of digital curation needs & expectations
- Analysis of syllabi
- Analysis of job postings

Draft Matrix of Topics for Digital Curation Curriculum

1. Mandates, Values & Principles

- 1.1. Ethics
- 1.2. Core Digital Curation Principles & Values
- Accountability
 - Adaptability & Robustness
 - Authenticity
 - Automating & Informating of Tasks
 - Abstraction
 - Context
 - Continuum & Lifecycle Orientations
 - Critical Inquiry
 - Diversity
 - Collection
 - Context
 - Continuum & Lifecycle Orientations
 - Critical Inquiry
 - Diversity
 - Evidence
 - Long Term
 - Openness & Interoperability
 - Provenance & Chain of Custody
 - Scale & Scalability
 - Significant Properties
 - Stakeholders
 - Trust

1.3. Legal Requirements

1.4. Standards

1.5. Interoperability & Sustainability Requirements

2. Functions & Skills

3. Professional, Disciplinary, Institutional, or Organizational Context

- 3.1. Professional Context
- 3.1.1. History of Professional Activities
- Care and properties of physical media
 - Hardware and software interoperability
 - Long-term management of institutional archives & personal papers
 - Social science data archives
 - Natural & physical science data archives (e.g. earth & space science)
 - Management & provision of access to digital library collections

3.1.2. Professional Development

3.2. Disciplinary Context

3.3. Institutional/Organizational Context

3.3.1. Characteristics of information & record creating environments

4. Type of Resource

- 4.1. Level of aggregation
- 4.2. Level of abstraction
- 4.3. Medium – optical, magnetic
- 4.4. Format
- 4.5. Genre
- Component
 - Work
 - Expression
 - Object
 - Manifestation
 - Collection
 - Item

5. Prerequisite Knowledge

5.1. Terminology

5.2. Characteristics of Technologies

5.2.1. Definitions of Technology

5.2.2. History & evolution of ICTs

5.2.2.1. General Patterns & Lessons

- 5.2.2.2. Specific Developments & Generations of Technology
- From purpose-built computers to mainframes, time sharing, minicomputers, personal computers, client-server, mobile devices
 - Dominant storage technologies from given eras
 - History of the Internet

5.2.3. Essential Characteristics & Elements of Current & Emerging ICT Landscape

- Abstraction and virtualization (e.g. emulation, virtual machines, virtual name spaces)
- Compression
- Data structures and data types
- Databases
- Encryption
- File formats
- File Systems
- Identifiers for digital objects
 - Commonly used identifiers (e.g. file names, URLs)
 - Promising approaches for persistent identifiers
 - Differences between local and global identifiers
 - Images (vector, raster)
 - Markup languages (including XML)
 - Models and modeling
- Entity-relationship and object-oriented approaches
- Types of models (e.g. functional, data flow)
- Networks
- Operating Systems
- Programming
- Roles & differences between source code, compilers, interpreters, machine instructions
- Role and relationships of main hardware components
- Security
- Storage media and devices - operation and characteristics (magnetic and optical)
- Standards
 - Roles of standards – both within the computer industry and for digital curation
 - Types of standards
 - Standards development process

6. Transition Point in Information Continuum

- Pre-Creation Design and Planning
- Creation
- Primary Use Environment (Active Use)
- Transfer to Archives
- Archives (Preservation Environment)
- Transfer Copies or Surrogates to Secondary Use Environment
- Secondary Use Environment

Draft High-Level Categories of Digital Curation Functions

Category	First-Level Sub-Functions
1. Systems Engineering & Development	<ul style="list-style-type: none"> • Analysis • Coding, testing & implementation • Database analysis • Assign to management class • Ensure production is authorized & ethically sound
2. Production	<ul style="list-style-type: none"> • Design • Interface design • Fix to medium
3. Selection, Appraisal & Disposition	<ul style="list-style-type: none"> • Identify needs • Select valuable information resources • Make selection, appraisal or disposition decision
4. Identifying, Locating & Harvesting	<ul style="list-style-type: none"> • Extracting identifier information to determine network location of resource • Harvesting metadata from an external source or repository • Making request to appropriate location to collect resource • Defining & setting parameters for harvests & file requests
5. Transfer	<ul style="list-style-type: none"> • Putting
6. Ingest	<ul style="list-style-type: none"> • Generating API • Match content with rules & agreements • Providing feedback to Producer • Linking resolution services • Perform Queries
7. Data Management	<ul style="list-style-type: none"> • Create & maintenance of producer profiles • Creation & maintenance of policy rule registries • Creation & maintenance of tools registry & tools service • Establish plan & conventions for descriptive information
8. Description, Organization & Intellectual Control	<ul style="list-style-type: none"> • Create & maintenance of representation information registry
9. Archival Storage	<ul style="list-style-type: none"> • Disaster planning, preparation & response • Ensuring sufficient redundancy of copies • Error checking • Definition or approval of archives mission, objectives & goals • Fund raising • Holdings maintenance • Management of storage hierarchy • Providing data • Management & guidance for resource utilization • Definition or approval of high-level policies
10. Management	<ul style="list-style-type: none"> • Facilities management & planning • Human resource management • Implementing & enforcing standards, policies & rules • Leadership • Management of system configuration • Management of response to challenges or complaints • Managing relationships between Administration & Management • Monitoring & proof of compliance with standards, policies & rules
11. Administration	<ul style="list-style-type: none"> • Monitor changes in warrant • Planning • Project management • Review & update of standards, policies & rules • Organizational change management • Risk management • Security • Statistical analysis to support operations
12. Preservation Planning & Implementation	<ul style="list-style-type: none"> • Develop packaging designs & migration plans • Develop preservation strategies & standards • Monitor designed community • Monitor technology • Define significant properties to preserve • Reconciling preservation requirements with preservation capabilities
13. Access	<ul style="list-style-type: none"> • Coordination of access activities • Delivery of responses • Exposure • Generation of access collections • Generation of DIP • Information discovery • Information retrieval • Legal discovery
14. Use, Reuse & Adding Value to Accessed Information	<ul style="list-style-type: none"> • Developing policies for reference services • Facilitating access to useful & appropriate digital objects • Help desk & end user technical support • Providing associated information to consumers
15. Reference Services	<ul style="list-style-type: none"> • Network services • Operating system services • Security services
16. Common Services	<ul style="list-style-type: none"> • Destruction • Identifying, establishing & coordinating specific types of collaborative relationships with other Archives • Management of agreements • Negotiation & maintenance of effective relations with external actors • Sourcing
17. Destruction & Removal	<ul style="list-style-type: none"> • Outreach & public programming • Understanding & promoting Archive's role within the larger institutional context • Identification of recordkeeping requirements • Engagement with local community • Preliminary Investigation
18. Collaboration, Coordination & Contracting with External Actors	<ul style="list-style-type: none"> • Management of agreements
19. Advocacy & Outreach	<ul style="list-style-type: none"> • Standards development • Underwriting & promoting Archive's role within the larger institutional context • Identification of recordkeeping requirements • Engagement with local community • Preliminary Investigation
20. Analysis & Evaluation of Producer Information Environment	<ul style="list-style-type: none"> • Assessment of business activity • Assessment of existing systems • Analysis & characterization of digital objects within information package • Characterization of information object • Information Package
21. Analysis & Characterization of Digital Objects/Packages	<ul style="list-style-type: none"> • Check for viruses • Digital Object • Digital Object Components
22. Validation & Quality Control of Digital Objects/Packages	
23. Transformation of Digital Objects/Packages	
24. Purchasing & Licensing of Resources	
25. Analysis & Documentation of Curation Functions	<ul style="list-style-type: none"> • Monitoring & logging • Process mapping
26. Evaluation & Audit of Curation Functions	<ul style="list-style-type: none"> • Certification of the archive
27. Research & Development to Support Curation Functions	<ul style="list-style-type: none"> • Research methods • Supporting & administering research & development • Business process identification & analysis • User needs analysis & usability assessment
28. Education & Sharing of Expertise or Guidance on Curation Functions	

