

Learners on the Back end: Students Contributing to Web-based Information Systems

Poster Presentation given at the Conference for Computer-human Interaction (CHI 2003)

April 5-10, 2003

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In a prior study, our research group *conducted studies of a system that focused on how people learn from browsing web-based information...*

Arthritis Source

- Informational web site about arthritis
- Designed based on research on patient-centered information
- Allows question-based navigation
- Content organized as articles, which are managed with a Zope database
- Supports distributed content creation using web-based article templates

what happens when students, instead of merely drawing from online resources, populate and organize such resources?

We were interested in how students might learn from creating the content and structure for systems similar to the Arthritis Source. To explore this idea, we worked with two learning communities. We created two prototype systems based on the Arthritis Source architecture. These prototypes were implemented and updated by our research group developers.

The BaSiC Program on Sustainable Building Methods

THE COMMUNITY

- UW College of Architecture and Penn State Department of Architectural Engineering
- Multi-disciplinary program (architects, engineers, urban planners)
- Program has both classroom-based and design-build components

THE GOAL

- Create an information resource for professionals around the world as well as an effective learning experience for students
- Create a knowledge base that can evolve over time

The Prototype System:

- *Instructor-designed article templates that were implemented by our research group*
- *Ability to leave comments about articles*

STUDENT WORK

Students research existing sustainable building projects and technologies, and document new projects built by the BaSiC program:

- Use article templates to guide and present research
- Create content for a public audience
- Review each others work
- Evaluate templates and make suggestions that are incorporated into next term's templates

LawforWa.org: Legal Information for the Washington State Public

THE COMMUNITY

- Washington State Bar Association and UW Law School
- A group of law students worked on this project as part of directed fieldwork

THE GOAL

- Create portal to Washington and federal law information on the web
- Create multiple methods for accessing information.
- Anticipate questions the public might have about the law and provide pointers to resources that answer those questions

The Prototype System:

- *Flexible faceted classification scheme for structuring content*
- *Facets allow multiple access points rather than hierarchical organization for content*
- *Question-based navigation*

STUDENT WORK

- Researched law topics and found existing web-based resources
- Evaluated resources for reliability
- Developed questions that a resource could answer
- Categorized resources using predetermined facets. These categories and facets were encoded in the system by our research group.
- Determined the structure of the "Topic" facet

Learning Opportunities

- Databases as Cognitive Tools [Facets and Templates]
 - Structure of database encourages learners to analyze, evaluate, and organize information
 - Categorizing and classifying information helps learners understand the knowledge structure of a domain

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- Categorizing information and developing new subtopics for facets helped learners understand the structure of the law
- Learners needed to “exhaust a topic” in order to understand the boundaries of a subtopic.

The BaSiC Program

- Templates encouraged more in-depth and extensive research
- Templates scaffolded writing by helping learners organize their research and helping them pick out what was important
- Templates helped students critically evaluate information by providing a basis for comparing sustainable strategies and technologies
- Evaluating the template questions helped learners think about the way knowledge is structured in their discipline

- Authentic Learning Environments [Web-based, publishable]
 - Writing for a public audience creates a purpose for student research that is more meaningful than writing for just the instructor

The BaSiC Program

- Learners participate in their professional community of practice by creating new resources for professionals in their field.

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- By organizing information for use by non-professionals, learners had to “learn and think the language of the clients”, just as professional lawyers do

- Knowledge-Building Communities [Commenting feature, Flexible categorization]
 - Online database provides framework for learners to share and co-construct knowledge
 - Flexible categorization allows the structure of the knowledge-base to evolve over time
 - Commenting feature allows learners to review and evaluate each other’s work

The BaSiC Program

- Research and contribution to the database is ongoing - each generation of students builds on the work of previous students.
- Students can leave comments suggesting possible directions for next generation of students.
- Students are asked to review the work of at least one of their peers
- [Architecture students at the UW are able to communicate with engineering students at Penn State about their different disciplinary approaches](#)

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- Learners collaborated by engaging in face-to-face conversations about the structure and content of the database

NEXT STEPS: Creating a tool for end-users.

Motivation: Instead of creating individual customized systems, we aim to create a tool that will allow instructors and students to create customized systems with functionality that we found contributes to learning.

Goals:

- Allow end-users to implement the content and structure for information resources
- Usable by instructors and students alike
- Enable teachers to define the roles they want students to play in structuring and developing content
- Support a process for assuring content quality
- Facilitate collaborative knowledge building

Planned Features of the zBento System:

- Template builder
- Categories ([facets?](#))
- Information can be marked as internal or public
- Mechanisms for reviewing and publishing information ([do we know what this mechanism looks like?](#))
- Owner can set permissions for accessing and editing content and structure
- Content Managers UI ([what is this?](#))
- Author Profiles
- [Additional mechanisms for communication/collaboration? e.g., one survey response mentioned importance of having a way for architects and engineers to communicate](#)