Communicative Dimensions of Meta-Design: The Digital Water Education Library

Mick Khoo, L3D Meeting
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Structure

• 1. Meta-design and communication
• 2. Digital Water Education Library
• 3. Problem
• 4. Analysis
• 5. Intervention
• 6. Outcomes
• 7. Conclusions
Conclusions

• Designers, users, and designer-users working together with the same technology, can embrace differing definitions of that technology
• In some cases these differences may not be readily apparent to these participants
• Meta-design can play a role in the design and support of communication between designers, users, and designer-users
1. Meta-design and Communication
Meta-Design & Communication

• Meta-design models the involvement of representatives of user communities in the design of artifacts that they will use

• ‘User-developers’ mediate between the worlds of developers and users to develop artifacts better suited to their user needs

• Implicit in meta-design is a model of communication that assumes that developers, user-developers, and users can talk amongst each other

• In reality, how does this communication work?
Design Time and Use Time

KEY:

- system developer
- user (representative)
- end users

world-as-imagined planning

world-as-experienced situated action
Design Time and Use Time

KEY:
- system developer
- user (representative)
- end users

- design time
- use time
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use time
Meta-Design & Communication

• Different groups are involved in MD
• These groups can also be heterogenous
• Giddens, Ehn, Wittgenstein, Orlikowski suggest that these groups may have different ontological/practical understandings of the artifact
• How to maintain and support communication between different groups and understandings?
2. The Digital Water Education Library
DWEL

• 2 year NSF DL project
• 500 exemplary online resources to teach about water in K-12 and informal educational settings
• Structuring documents, e.g. scope statement, review criteria
• Accessed to DLESE as a complete collection
• Using approx. 25 volunteers
• Web tools:
  – Cataloguing tool (DLESE)
  – WebCT as design environment
  – E-mail, browsers, etc.
Institutional context for DWEL

Shaded area = WebCT environment
3. The Problem
WebCT posts, first 6 months
Initial Actions/Interventions

- Questionnaire/survey
- Regular PI telecons
- Cataloguers are busy people; tasks are complex; more structure required
- ‘Buddy system’
- Regular assignments
- PI/Working Group Leader telecons
Catalogue records, first 6 months

Week

# Records

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26
4. The Analysis
Centering Resonance Analysis

- Form of Latent Semantic Analysis
- Focuses on nouns as units of meaning
- Clusters nouns based on frequency and relationship to other nouns
- Analyses large amounts of org comm
- DWEL: Project proposal and other documents, transcripts of 3 days of meetings between developers and users
## CRA: Use of ‘Resource’

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Table 1b: Use of words other than ‘resource’

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Digital Water Education Library
NSDL
Initial Analysis (I)

- User-developers and developers have different understandings of DLs
- User see DLs as bricks-and-mortar libraries that are digitised
- Developers see DLs as digital artifacts with certain library-like characteristics (Khoo 2001)
Initial Analysis (II)

• Use/lack of use of word resource interpreted to mean:
• User-developers see DWEL in terms of classroom practice
• Developers tend to see DWEL in terms of database, populated with a structured collection of reviewed educational resources described with metadata
Analysis (III)

• These differences were not apparent to those who attended the January 2002 meeting - they had thought that they were in agreement.

• This suggests that the differences identified by CRA are different practical and *ontological* framings of DWEL.

• How to support communication between developer-users and developers, when differences are ontological?

• How to represent developer’s frame to user-developers?
5. Intervention
Intervention: Representing the Project

• How to make designer model of DWEL available to user-developers?
• Decompose DWEL as an artifact into series of easily understandable components
• Represent these components graphically, e.g.:
  – DWEL as a series of interlinked subject domains that provide full scope coverage
  – DWEL as a series of tasks linked to the development of those domains over the life of the project
Intervention: Representing the Problem

• How to make designer model of collection development available to user-developers?
• Decompose complex collection devpt process into series of easily understandable steps
• Represent these steps graphically
1 SEARCHING

INPUT:
THE BIG WORLD WIDE WEB

SELECTION OF SITES TO MINE
WHO:
BRYAN,
POLICIES/RUBRICS GUIDING THIS:
* DWEL SEARCH STRATEGY STATEMENT
* DWEL SCOPE STATEMENT
* DLESE HIGH LEVEL FILTERS

OUTPUT (TO STAGE 2A):
LIST OF ALL URLs TO BE EVALUATED

OUTPUT (TO DCS):
CATALOGUE RECORD FOR ALL URLs TO BE EVALUATED
4A CATALOGUING: RESOURCE DESCRIPTION

INPUT (FROM STAGE 3B):
LIST OF URLs ASSIGNED TO WORKING GROUPS

RESOURCE DESCRIPTION AND CONTENT

WHO:
WORKING GROUP MEMBERS, WORKING GROUP LEADERS

HOW:
- WG LEADERS AND MEMBERS ENTER, IN APPROPRIATE DCS RECORD FIELD, DESCRIPTIONS OF RESOURCES ASSIGNED IN STAGES 3A AND 3B
- WG LEADERS AND MEMBERS ARE ENCOURAGED TO COMPLETE OTHER FIELDS, IF THEIR EXPERTISE PERMITS
- RECORD IS SUBMITTED TO DCS

POLICIES/RUBRICS GUIDING THIS:
* DWEL SCOPE STATEMENT
* DWEL DESCRIPTION RUBRIC
* DCS CATALOGUING BEST PRACTICES, STANDARDS RUBRIC, ETC.

COMMUNICATION:
E-MAIL, WEBCT

OUTPUT (TO STAGE 4B):
DWEL CATALOGUE RECORD WITH AT LEAST COMPLETED DESCRIPTION FIELD; MOVE TO ‘SAVE AND SUBMIT’

REJECTED RESOURCES (TO DCS):
- SCORE AGAINST RUBRIC
- ENTER SCORE (AND IF POSSIBLE FEEDBACK FOR DEVELOPERS) IN CATALOGUE RECORD DESCRIPTION FIELD
- TRANSFER RECORD TO ‘HOLDING’
Intervention:
Designing a solution

• Workflow model turned into online tool - the DWEL WorkHub - at CSU
• Series of linked web pages and forms that guided the educators through the selection, reviewing, cataloguing and metadata generation steps outlined in original graphic
Intervention: Implementation

- DWEL WorkHub brought online November 2002
- Includes downloadable documentation and instructions
  January 2003: 2 sets of 2 day training workshops held in computer lab at CSU
6. Outcomes
It seemed to work …

• … for a while
• Cataloguing did not show a huge improvement in productivity, but it did switch from ‘boom and bust’ cycle to a steady accumulation of records
DWEL Catalogue records, cumulative

Week

# Records

New instructions

2003 Workshops
Lessons Learned

• At the original workshops of January 2002, it was assumed that the tools required for the project were the cataloguing and discussion tools

• Regarding the necessity of scope documents and review criteria, it was assumed that communication had occurred between developers and user-developers; and that the user-developers had understood these necessities
Design Time and Use Time

**KEY:**
- System developer
- User (representative)
- End users

**World-as-Imagined Planning**
- Design time

**World-as-Experienced Situated Action**
- Use time
Lessons Learned

• Such communication had not occurred however (see CRA), and the developer-users had not understood the importance of developing collection scope and review criteria prior to collecting
• This led to low project productivity
• CRA suggested that the developers and developer users thought of DWEL in different ways
• The DWEL WorkHub incorporated developer thinking regarding review and scope and made this accessible to the developer-users in the form of a structured online workflow tool
Lessons Learned

• It was a mistake to assume that the user-developers could come to a nuanced understanding of all dimensions of collection development on their own

• They had to be supported to come to such understandings by the tools (if indeed they developed such understandings at all … maybe they just wanted to do their jobs)
Conclusions

• Designers, users, and designer-users working together with the same technology, can embrace differing definitions of that technology
• In some cases these differences may not be readily apparent to these participants
• Meta-design can play a role in the design and support of communication between designers, users, and designer-users
QUESTIONS?
DWEL workshops, January 2002
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