Scenario-based learning in small to medium sized groups of learners

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Plan

- Perspectives on organizational learning
  - Management science versus Computer science
- Case study from HCI
- Lessons learnt

Organizational learning

- Two perspectives
  - Management scientists tend to emphasise the importance of systems thinking
    - experience factory
  - Computer scientists are more attracted to tools
    - design rationale systems
    - organizational memories
- Common elements
  - capturing, storing and reusing knowledge

Common themes

- Learning as social contract amongst community members
- Learning community formed over a non-contemporary medium such as intranets, or the internet
- Learning can take several forms
  - accessing existing information e.g., training materials, seminars, slides, documents
  - accessing previous experiences (experince factory)
  - reuse of knowledge, etc

Learning mechanisms

- Management perspective
  - Experience factory (NASA, DaimlerChrysler)
    - an organisational unit rather than a tool which abstracts and helps other units reuse experiences
    - experience base as cornerstone to the learning endeavor
    - experince engineers consolidate, compare and add value to initial experiences
- Computer Science
  - Variety of tools
    - CSCW
    - Collaborative argumentation
    - Web conferencing
    - Intranet-based Document Management Systems
    - MUDs & MOOs
    - Organizational / Group memory systems
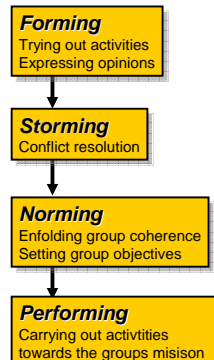 - Tool as cornerstone to the learning endeavor

Computer-based tools

- Collaborative argumentation (Design Rationale Systems)
  - documenting reasoning and justification
- Organizational Memory Information Systems
  - preserving knowledge and experiences that reside in an organization
- Intranet-based Document Management Systems
  - supporting the organization's internal information needs
- Distance learning
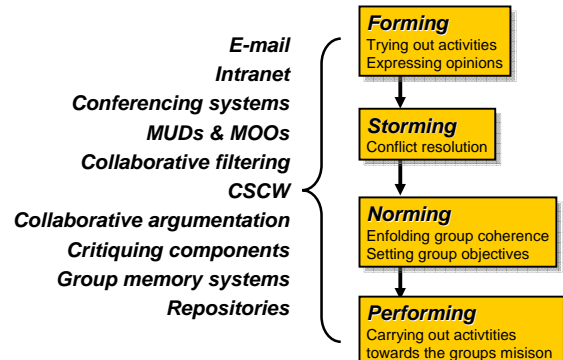 - embedded within traditional curriculum-driven educational models

Model of social interaction

- All four phases involve information flows from one place to another
- Learning correlated with degree of group stabilization
  - Initial phases require simple learning materials and tools
  - More advanced forms of learning can be experienced once the group's objectives are consolidated

Forming
Trying out activities
Expressing opinions

Storming
Conflict resolution

Norming
Enfolding group coherence
Setting group objectives

Performing
Carrying out activtities
towards the groups misison

Technologies

E-mail
Intranet
Conferencing systems
MUDs & MOOs
Collaborative filtering
CSCW
Collaborative argumentation
Critiquing components
Group memory systems
Repositories

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Example: Learning by performing

- A system which supports the following facets of learning
  - Learning inextricably intertwined with performing
    - In the case to be presented
      - performing = designing a user interface
  - Learning as social contract amongst community members
    - In the case to be presented
      - Learning community = Tutorial class members
      - Learning community formed over a non-contemporary medium such as the internet
  - Learning achieved through
    - Accessing & sharing
      - Existing information e.g., guideline manuals, examples of good practice, training materials, seminars, slides, documents
      - Previous experiences (reuse)
      - Argumentative dialogues

Area of application

- Design of user-adapted interfaces
  - Focus on accessibility
- Bridging across design perspectives and practices
  - Assistive technology design
  - User interface design & evaluation
  - Prototyping
- Capture the dynamics of design practices to facilitate experience-based learning

Learning exercise - Scenario

Design an interface for a user to carry out a *text-editing task* in a graphical user interface. The user has mild motor impairments, which delimit control to *gross temporal movements*, exercised through contact with the *fist*. Fingertips cannot be reliably employed due to *tremor on key-press*, while movements can be performed in *timed patterns* and upon *demand*.

Learning context

- Learning community
  - User interface designer
    - A member of the group o create the computer mock-up
  - User modeler
    - A member of the group to create a profile of the user
  - Human factors / evaluator
    - A member of the group to assess design alternatives
- Learning medium
  - Computer-mediated design environment
- Learning objective
  - Accomplish the design
  - Document collective wisdom

The designer - Envisioning artifacts

Accessibility Guidelines Past experience

➤ Artifacts for text editing

The designer - Envisioning artifacts

Accessibility Guidelines Past experience

➤ Artifacts for window management

The user modeler

Assessment manual

The programmer

User interface Design wisdom

Paper mock-ups

Group memory: The job of a facilitator

Group memory: The job of a facilitator

Critiquing
Human-computer collaboration

- Undertaken by a computational critiquing component

Critiquing
Human-computer collaboration

- Spec captures collective wisdom
- It is experience-based
- It can be reused
- It can be refined, modified and updated

EVANS (State of the art)

- A research proposal extending previous work & emphasizing
  - Computer-supported scenario management
  - Graphical hypertext for design rationale
  - Groupware for synchronous design activities
- Stage of development
  - Four undergraduate dissertations in progress