Contextual Inquiry Method for User-Centred Clinical IT System Design

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How to do user research:
gather information about HIT users, their tasks, and system usage?

What are the benefits and challenges in gathering data in situ (observing and interviewing) instead of using traditional usability evaluation methods (expert review or laboratory testing)?
Background: Literature

• Field study methods have not been widely applied in health informatics field.
• Compared to evaluation approach, these might be more suited for informing conceptual problems and developing understanding of the wider context in which the clinical IT systems are used.
• Little can be found in the literature about the applicability of contextual inquiry (CI) method in healthcare IT research and development.
  – Suggestions for methodology considerations; Colbe et al., (1995); Chan (2002); Martin et al., 1998.
Aim of the paper

Describe experiences and lessons learned with contextual inquiry (CI) based on two empirical studies:
1) a dictation study with physicians, and
2) an evaluation of nursing documentation systems.

→ Provide information about the characteristics of healthcare contexts that are essential to be considered when applying the method

→ Promote the adoption of the CI method among practitioners and researchers in the health informatics field
What is the Contextual Inquiry (CI) Method? (1/2)

(Beyer & Holzblatt, 1998)

• Field data gathering technique

• The method enables researchers to create an understanding of
  – who the users really are
  – how they work on a day-to-day basis

• This understanding becomes the basis for developing a system model that will support users’ work.
What is the Contextual Inquiry (CI) Method? (2/2)

Procedure:
- Plan: What is the focus?
- User recruitment: 5-8 users
- Researcher observes a user at work and asks about his/her actions
- Recording of data
- Analysis

Principles:
1. **Context**: actual working environment and ongoing experience
2. **Focus**: Tasks to be observed, steers the conversation
3. **Partnership**: User is the expert, researcher an apprentice
4. **Interpretation**: Findings (and design) are interpretation of facts, and are
Study 1: Dictation Study with Physicians

Focus: Dictation procedure and the used IT systems

Users: 7 physicians

Inquiry:
- Background: Discussion about users’ backgrounds and their previous experiences with the dictation procedures and systems.
  - Focus: Dictation procedure and the used IT systems
  - Users: 7
Study 2: Evaluation of nursing documentation systems

Focus: Documentation tasks in nursing work

Users: 18 nurses from 7 organizations

Contexts: Clinics, Polyclinic, 8

Inquiry:
- **Background:** Working ‘history and experiences with nursing documentation techniques.

Descriptions of daily work and situations in which documentation is conducted, as well as patient information retrieved.

- **Practical exercise:** A documentation entry exercise using prewritten patient inquiry.

- **Background:**

Working ‘history and experiences with nursing documentation techniques.

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Working ‘history and experiences with nursing documentation techniques.
Experiences with CI: Advantages

• Enables the researchers to make insightful observations, and identify general and context-specific needs.
• Addresses the issues of clinical IT system usage from the task and end-user oriented perspectives.
• Makes it possible to analyse clinicians’ actions with interactive systems in environments in which numerous systems are used simultaneously.
• Provides the researchers with an opportunity to increase their understanding of healthcare technology, as well as medical terminology and working practices.
• Can reveal needs and problems in system usage that the clinicians cannot articulate.
• Enables the gathering of a large amount of qualitative data.
• Provides concrete data about IT systems’ usage in clinical settings: interaction between the user and the systems, effectiveness of use, and communication and information sharing aspects.
Experiences with CI: Challenges

• Requires an access to real healthcare settings and permission to record audio or voice data.
• Might be time-consuming to conduct due to its highly qualitative nature.
• Requires clinicians’ participation (clinicians tend to be busy with customary clinical tasks and unexpected emergencies).
• Issues of patient privacy and health data security aspects are essential to be considered.
• All of the pictures and other recorded data need to be carefully anonymised, at the latest, in the analysis phase.
• It is easy to question the representativeness of the data, since the interview studies typically involve a rather small number of users per user group.
Thank you!

Questions or comments?

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