User Centered Design: Practical Application

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Leslie Weber
Diane J. Skiba, PhD
Abstract

6F. PANEL: User-Centered Design; Practical Application

This panel focuses on principles and techniques of User Centered Design.

These principles will be highlighted within an iterative product development cycle. Practical examples of user research and usability testing will also be discussed.

The panel will conclude with a description of one method of teaching nursing informatics students about User Centered Design and involving students’ in usability testing.

Level: Novice to Intermediate
Panel Members

Teresa McCasky, MBA, RN-BC
Chief Nurse Strategist
McKesson Provider Technologies

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Leslie Weber
User Interface Designer
McKesson Provider Technologies
Topics

- UCD at McKesson
  - Importance
  - Definitions
  - User Centered Design Cycles
  - Techniques
  - Samples
  - References

- UCDHSC Informatics
UCD at McKesson – Our People

- **User Interface Designers**
  - Human Factors Engineering
  - Experimental or Cognitive Psychology
  - Industrial Design
  - Technical Communications
  - Fine Arts

- **Primary Responsibilities**
  - User Research
  - User Interface Design
  - Usability Testing
User Centered Design at McKesson

Leslie Weber  
User Interface Analyst
Some Working Definitions

- **Usability** is a measure of how well a product can be used by specific users to achieve specific goals with effectiveness, efficiency and satisfaction in a specified context of use.

- **User Centered Design (UCD)** describes the user-centered activities within a software development process which are intended to make a system easy and satisfying to use.

- **Key Activities**
  - User Research to inform the design process
  - Iterative Design
  - User Based Evaluations to refine the design
User Centered Design Cycle at McKesson

- Plan for 3 cycles
  - Research - Gather data
  - Analyze - Find patterns
  - Synthesize - Create models
  - Build - Build to models
Research - Cycle 1

- Start with a real world understanding:
  - Who are your users?
  - What are their goals?
  - What is the context of use?

- Qualitative Techniques
  - Direct Observation
  - Interviews/ Contextual Inquiry

- Goal: Make data driven design decisions
Analyze - Cycle 1

- Interpret and consolidate the data across customers
- Identify types or classes of Users (User Profiles)
- Identify tasks - frequent, critical, etc
- Identify usability goals: effectiveness, efficiency, and satisfaction measures
Synthesize - Cycle 1

- Prioritize users
  - Create Primary Personas
  - Create Secondary Personas
- Prioritize features
- Prioritize goals/tasks
- Create scenarios for the “to be” workflows/tasks
  - Day in the Life Scenarios
  - Scenarios of Use
  - User Stories
Build - Cycle 1

- Build a Design Model
  - Concept Design
  - Prototype (Wireframe)
Research - Cycle 2

- Test the Design Model with real users
  - Recruit representative users - 5 to 7 at least
- Techniques
  - Formative/Exploratory Usability Testing
- Goal: How usable can we make this design?
Analyze - Cycle 2

- Consolidate and interpret the data
- Make data driven recommendations
Synthesize - Cycle 2

- Refine user and task models if necessary
- Refine or reprioritize features
Build - Cycle 2

- Iterate the Design Model
  - Detail Design Prototype
Test the Design Model with real users
- Recruit representative users - 5 to 7 at least

Techniques
- Summative Usability Testing

Goal: How usable is this design?
Analyze - Cycle 3

- Consolidate and interpret the data
- Make data driven recommendations

Diagram:

- Analyze
- Synthesize
- Research
- Build
Synthesize - Cycle 3

- Refine user and task models if necessary
- Refine or reprioritize features
Build - Cycle 3

- Iterate the Design Model
  - Final Design Prototype
  - Create the User Interface Specification
Research Techniques

- Direct Observation
- Interviews/Contextual Inquiry
Direct Observation

“Fly on the Wall” - confirm findings later

- Gather information about the natural patterns of behavior with a minimum of interference
- Notate observations for later understanding:
  - Capture what people do vs. what they say they do
  - Categorize observations
  - Make timelines that show relationships between system behavior and the people who interact with the systems
Contextual Inquiry

- Contextual inquiry is an interview technique for gathering field data from users in their normal work environment

- Context provides cues
  - Users report on their behavior more accurately while they are performing or talking about a task in the place where it is normally performed

- Attitude: Partnership
  - Develop tone of collaborative exploration
  - Alternate between observation of work and discussion

- First: Observe their behavior in context
  - See and record what they do first, before questions
  - Interruptions will alter their behavior and disrupt the flow

- Second: Gather their interpretations
  - Identify and prioritize goals first; tasks are secondary
  - Avoid assumptions and “putting words in their mouth”
Data Capture

Observer ____________________ Person observed ____________________

Hospital ____________________ Unit ____________________ Date ________ Time ________ am/pm  Page _____

**Physical Inventory of the Unit (AEIOU)**

- Take pictures of all information sources, esp. informal ones (binders, whiteboards, sticky notes, notebooks, PDAs, books).
- Get copies of all paper forms in use.
- Examine computer station in detail. Look for physical signs of workarounds: sticky notes, worn keys, fingerprints, hardware modifications.
- Sketch the unit. Include location of information sources, pictures of areas, places where time is spent, and frequently traveled routes.

<table>
<thead>
<tr>
<th>Activities (tasks people are doing)</th>
<th>Sketch of unit</th>
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<table>
<thead>
<tr>
<th>Environments</th>
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<tr>
<th>Interactions (people-people, people-objects)</th>
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<table>
<thead>
<tr>
<th>Objects (and how they relate to activities)</th>
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<table>
<thead>
<tr>
<th>Users (people, roles, relationships)</th>
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</table>
GOAL: How is information gathered, stored, and transferred in the patient environment?

Hints: Take pictures of all paper (notes, binders, etc) • Ask person to ‘think aloud’ during tasks • Look for workarounds • Let them talk

<table>
<thead>
<tr>
<th>Time</th>
<th>Task or Observation (what you saw or “quotes”)</th>
<th>Pic #</th>
<th>Comments (why it was interesting – workaround, idea, sketch)</th>
</tr>
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<tbody>
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</tbody>
</table>
## Data Capture

<table>
<thead>
<tr>
<th>Topic</th>
<th>Responses</th>
<th>Sketch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment Board</td>
<td></td>
<td></td>
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<tr>
<td>What's on the board</td>
<td></td>
<td></td>
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<tr>
<td>Who maintains it</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Who looks at it</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KARDEX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What's on it</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Where is it kept</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Who updates it</td>
<td></td>
<td></td>
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<tr>
<td>Who uses it</td>
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</table>
Synthesis Artifacts

- **User Models**
  - Personas

- **Activity Models**
  - Scenarios of Use
  - Day in the Life Scenarios
  - User Stories
Personas

- A persona is created as an aggregate of the real users you have observed and interviewed.
- A persona is a fictional user created to represent a class of users.

**Important elements:**

- **Picture**
- **Demographic**
  - Age, gender, profession, marital status
- **Personal**
  - Family, hobbies, recreation, geographic location, rent/own
- **Technological**
  - Computer experience, connection speed, computer type
- **Details relevant to the product**
  - Purpose of using product, goals, prior knowledge
Personas: Benefits

- Personas help determine key features, are used to communicate ideas, build consensus and commitment to designs, and measure design effectiveness.

- Personas resolve three development issues:
  - The “elastic” user that keeps changing to suit needs
  - Self-referential design - designing for oneself
  - Edge case design focus - instead of getting the basics right, sometimes people worry the most about what will happen least
## Persona: Sample Set

<table>
<thead>
<tr>
<th>MTA Users</th>
<th>Homecare agency staff</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Liz</strong></td>
<td>Field Nurse</td>
</tr>
<tr>
<td></td>
<td>Henry “What do I need to do?”</td>
</tr>
<tr>
<td></td>
<td>“I don’t want to be a bother!”</td>
</tr>
<tr>
<td><strong>Henry &amp; Agnes</strong></td>
<td>Home Health Aide</td>
</tr>
<tr>
<td></td>
<td>Agnes: “Take your watrr pill, Henry!”</td>
</tr>
<tr>
<td><strong>Beverly</strong></td>
<td>Homecare IT</td>
</tr>
<tr>
<td><strong>Gus</strong></td>
<td>“Remember, the PT is coming at 2!”</td>
</tr>
<tr>
<td>“I know what’s good for me.”</td>
<td></td>
</tr>
<tr>
<td>“Doesn’t matter what I do.”</td>
<td></td>
</tr>
<tr>
<td>Erma</td>
<td>Clinical Director</td>
</tr>
<tr>
<td>Louisa</td>
<td>“How can I help?”</td>
</tr>
<tr>
<td>Jenny</td>
<td>“I’ve seen systems come and go.”</td>
</tr>
<tr>
<td>Margaret</td>
<td></td>
</tr>
</tbody>
</table>

### Goals

- **Henry’s goals**
  - Have fun, make people laugh, take it easy
  - Avoid trips to the hospital
  - Maintain stability and predictability in his day
  - Avoid getting lectured by Erma
  - Help Henry remember
  - Make sure the house doesn’t look like a place where sick people live

- **Goals**
  - Be informed
  - Maintain health
  - Stay independent

- **Goals**
  - Be comfortable

- **Goals**
  - Grab the pain before it grabs you

- **Goals**
  - Help patients become independent
  - Encourage compliance
  - Keep track of exceptions
  - Be a patient advocate

- **Goals**
  - Ensure the health and safety of the residents
  - Get through the day smoothly
  - Be helpful when she can

- **Goals**
  - Be recognized as an expert
  - Encourage technology adoption
  - Be responsive and helpful

- **Goals**
  - Keep the nursing staff motivated and happy
  - Make the company more efficient
  - Improve clinical outcomes

### Needs help

- **Henry needs help**
  - Guidance in adopting a healthy lifestyle
  - Repetition and reminders about appropriate behaviors. Diet, etc.

- **Agnes needs help**
  - Support in remembering medication schedules, visits

- **Needs help**
  - Punctual visits
  - Efficiency
  - Reinforcement of existing habits
  - Respectful care
  - Answers to her questions

- **Needs help**
  - Connectedness
  - (Requires a live-in home health aide in order to remain compliant)

- **Touches system**
  - Installs the MTA
  - Determines patient settings

- **Touches system**
  - Encourages compliance and troubleshoots if patients have problems

- **Touches system**
  - Trains nurses to use MTA
  - Works with McKesson to troubleshoot

- **Touches system**
  - Assembles metrics for Margaret

- **Touches system**
  - Evaluates new products and must sign off on the purchase
  - Requires metrics from Jenny

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Sample provided by: McKesson Provider Technologies - Home Health Care

University of Colorado at Denver and Health Sciences Center
Overview

Henry & Agnes

Henry and Agnes have been married for more than fifty years, and they've lived in their current home for more than forty. They relish their independence and don't like to consider the possibility of giving it up. Since the onset of their CHF symptoms, their kids have been helping them with the shopping, errands, and home maintenance.
Background & attitudes

Henry & Agnes have shared their home for nearly 40 years
They call it their castle; it’s rich in comforts and filled with memories. There’s a place for everything, and everything is in its place. Agnes keeps it that way.

Henry & Agnes get lots of help from their family
Since being diagnosed with CHF, their family has rallied around Henry and Agnes. On Thursdays their daughter makes a run to the grocery store and pharmacy to make sure they have fresh food and filled prescriptions. On weekends their son comes by with his grandkids to do small projects and spruce up the yard.

Henry is a bit addled, but he’s concerned about his condition and wants to improve it
“I have C.R.S….” he says, “…Can’t Remember Stuff.” He tests himself against Jeopardy contestants, and can still answer some questions in the sports categories. When it comes to daily living, though, he struggles to retain focus and complete simple tasks.

Agnes fills in for Henry’s short-term memory
Agnes provides essential assistance for Henry as he attempts to adopt a healthier lifestyle. She reminds him to perform his session on the MTA, to take his medications, and to eat his vegetables.

Henry enjoys the nurses visits because they give him a chance to crack jokes and flirt
A former salesman, Henry enjoys bantering with people. He enjoys socializing with Erma when she visits, and Erma eggs him on, finding that playful conversation makes Henry much more receptive to medical suggestions.

Henry enjoys gadgets, but he has trouble remembering how to use them
Their kids gave Henry and Agnes a wide screen TV for Christmas. At first, the complexity of the remote control gave him fits, but Agnes labeled the important buttons with little stickers and he can now navigate between the History Channel and ESPN Classic with little trouble.

Henry is as compliant as he can be
Henry suffers from CHF and diabetes in part because he made little effort to change the bad habits in his lifestyle. Since he was diagnosed, he has curbed them, but he’ll still sneak a cookie from the tin full that Agnes makes for the grandkids when they visit.
Goals

Henry’s goals
- Have fun
  Henry doesn’t let his condition get him down. He has always wanted to make people laugh, and he continues to do this, especially when Erma visits.
- Avoid trips to the hospital
  He saw how much his last hospitalization upset Agnes, and he wants to keep her from “getting all stirred up,” as he might say. He also wants to continue living in his home as long as he can.
- Maintain stability and predictability in his day
  Henry has a TV routine that he religiously sticks to, and he really looks forward to the weekly visits from his kids and grandkids.
- Avoid getting lectured by Erma
  He likes to keep his times with Erma fun and social, and he knows he needs to do his part to keep Erma from lecturing him about his habits.

Agnes’s goals
- Help Henry remember
  She doesn’t want to nag, but Henry needs prodding.
- Maintain a neat, attractive home
  Their home is an outward sign of their internal well-being.

---

**Henry**

<table>
<thead>
<tr>
<th>Conditions</th>
<th>CHF, Diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disabilities</td>
<td>Short term memory loss, failing eyesight, disorientation</td>
</tr>
</tbody>
</table>

**Agnes**

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Nascent CHF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disabilities</td>
<td>Hearing loss, arthritis</td>
</tr>
</tbody>
</table>
Environment

Environmental considerations
Henry spends most of his day in his La-Z-Boy, watching his programs—mostly History Channel documentaries, quiz shows, and sports. Agnes putsters around the house more than Henry, but she spends a good portion of her day in the TV room with him.

<table>
<thead>
<tr>
<th>Henry</th>
<th>Agnes</th>
</tr>
</thead>
</table>
| Conditions     | CHF, Diabetes
| Disabilities   | Short term memory loss, failing eyesight, disorientation |
| Conditions     | Nascent CHF |
| Disabilities   | Hearing loss, arthritis |

Comfort setup
Henry and Agnes spend a great deal of time in their matching La-Z-Boys pointed toward the TV. Henry, once a Star Trek fan, calls this area “the bridge.”

Medications
Agnes keeps the medications near Henry’s comfort setup for two reasons: (1) they’re easy to access, and (2) they serve as a good reminder.
Scenarios of Use

- Create scenarios and stories that communicate and demonstrate the users' requirements
  - Scenario of Use
  - Day in the Life Scenarios
  - User Stories
Scenario of Use

Henry and Agnes’s scenario

The following scenario describes Henry’s scenario. Henry’s scenario is focused on multi-user home considerations, with detail fleshed out around his limited eyesight.

Henry does his daily session on the MTA

<table>
<thead>
<tr>
<th>#</th>
<th>Stage</th>
<th>Step</th>
<th>Need</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Begins session</td>
<td>Turns on the device</td>
<td>Ability to power up the device</td>
</tr>
<tr>
<td>2</td>
<td>Selects user</td>
<td>Indicates that it’s his session, not Agnes’s</td>
<td>Ability to identify oneself to the system</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Vocal mode is always on, so Henry always has the volume turned up and the entire session is read out loud to him)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Qualitative assessment</td>
<td>Answers questions related to the current state of his health—Do you feel good? Are you short of breath?</td>
<td>Ability to scan and grasp the intent of questions and responses</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>(Turns down the volume when Agnes answers the phone)</td>
<td>Ability to quickly and easily adjust volume</td>
</tr>
<tr>
<td>5</td>
<td>Vitals</td>
<td>(See Liz’s scenario—for details about vitals measurement.)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Summary</td>
<td>Looks at a summary</td>
<td>Ability to summarize significant data gathered during a session, and educational points covered about daily behavior</td>
</tr>
<tr>
<td>7</td>
<td>Education</td>
<td>Reads and responds to questions about his condition</td>
<td>Ability to provide follow-up education about particular aspects of a patient’s health based on information gathered during session Ability to drill in to get further detail and instruction</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td>Ability to drill in to get further detail and instruction</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>Gets interrupted by the effect of his water pill, then forgets to come back</td>
<td>Ability to leave a session and complete it later</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>Device brings up a screensaver after five minutes</td>
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</tr>
<tr>
<td>11</td>
<td>Switch users</td>
<td>Agnes wakes up the MTA and sees that Henry hasn’t completed his assessment. She decides to complete hers in the meantime.</td>
<td>Ability to switch users while a session remains incomplete</td>
</tr>
<tr>
<td>12</td>
<td>Henry returns</td>
<td>Agnes reminds Henry to finish his session, and he does so.</td>
<td>Ability to reactivate a session Ability to get re-oriented, remember where he left off</td>
</tr>
<tr>
<td>13</td>
<td></td>
<td>Completes the session</td>
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</table>
Day in the Life Scenarios

As a Charge Nurse starting my day...

I may start my shift as much as an hour before the Direct Care Nurses. I come in early to assure that all the patient assignments are correct and staffing is adequate. I may spend as much as an hour discussing unit status with the off-going Charge Nurse. I may spend some of that time reviewing patient charts or performing administrative tasks, such as staff eval or otherwise supporting the unit.

I want to see a list of all the patients in the unit. I want to see which patients assigned yet. I want to see which nurse is assigned to each patient. I want to patients sorted by nursing assignment or by ’walking order’ of the rooms. I will look at the following elements in a condensed display:
- Name
- Age
- Gender
- Bed Number
- Attending MD & Phone number
- Other Assigned MD's (Consulting, Covering, Admitting, etc.) with phone number
- Assigned Nurse this shift (or just the existence of an assignment)
- Assigned Nurse next shift (or just the existence of an assignment)
- Diagnosis
- Counts of orders: New, Modified, Meds, Non-Meds, CPOE vs. Paper
- Counts of orders to fall off of the counts once the Direct Care Nurse has been notified to fall off the count.
- Counts of Alerts generated by HCA – these should also fall off the count.
- Counts of Results from Lab & Radiology: Unviewed vs. Total, Unviewed vs. Unreviewed Critical (Unviewed by Me or by the assigned Nurse or by the Vital Signs – ICU may want hemodynamic and intracranial pressures; units want to see weights and possibly the changes of weight from time to time. They may want height, pulse oximeter, or other readings.
- Isolation Status
- Diet / NPO Status
- Fall Risk
- Mental Status
- Family Status
- Goal of the Day: this is an element of the Plan of Care that is updated should know each patient’s goal of the day and help them accomplish G.O.T.D includes: walking a certain distance today, eating a full meal, or without a fever. The patient should always participate in defining the plan of care.

As a Direct Care Nurse starting my day...

I take verbal report from the off-going nurse. As assignments are rarely consistent across shifts, I’ll need to speak to several nurses to hear report on each of my patients. This process often happens at the nurses station in small 1:1 standing sessions. We may have a conference room or break room to do this. On some nursing units, the off-going Charge Nurse gives a report on every patient in the unit. In rare cases, both 1:N and 1:1 report occurs. Report might be recorded by the previous shift, but the seems to be a declining practice. Shift change allows for 30 minutes of overlap between the off-going and on-coming nurses. I always get report, and may do one or more of the following before the previous shift leaves.

I want to see the full list of patients on the nursing unit, and then assign myself to my patients for the day. I want a clear view to those patients that don’t have a nurse assigned yet, and I want my patients to gather together in a group on the screen so it’s obvious who mine are. I can skip this whole exercise if the Charge Nurse has already assigned my patients for me.

I want to view a list of any new STAT orders, overdue orders occurrences and pending orders occurs due in the next hour for my patients: the stuff I’ve got to do now. My view to these items must let me know when I’m not looking at all the orders for a patient: filters must be clearly denoted and the system must make it clear to me when I am missing something because of a filter.

I may also refer to a paper form called the ’Kardex’ that contains persistent information about patients. There is one ’Kardex’ per patient and the form is usually kept in pencil. The form is not part of the permanent record, but contains information about all the non-medication orders (diet, treatments, dressing changes, etc.) as well as interesting information about the patient. Examples of this kind of information include: Hearing or Vision impairments, Mental Status issues, Family Issues, Patient Personal Preferences and so on. Some hospitals may document the Plan of Care on this form, as well. That part of the form does become part of the permanent record.

I may want to create a paper list of tasks I have to do throughout the day (the 'Brain') that I can carry in my pocket and review wherever I am. My 'brain' contains information about all of my patients and is usually only one page, no matter how small I have to write on it. I’ll want to write notes on that list and may need room to add more patients as I admit them. Having the computer print most of the information I need on that paper will be very helpful.
User Stories

Sample Method

- As a _______
- I need to _______
- So that I _______

Sample provided by:
McKesson Provider Technologies - Horizon Clinicals- Nursing Solutions
Build Models of the Solution

- Concept Design
- Detail Design
- Final Design
Research Techniques

- Formative Testing
- Summative Testing
Formative Testing

- AKA Exploratory Testing
- Goal: To evaluate the high-level design direction in order to design the most usable solution
- When: early in the product design cycle
- Design Model: very low fidelity prototypes (e.g. paper or click-through prototypes, with static screenshots)
- Measures: Qualitative
Summative Testing

- **AKA Assessment Testing**
- **Goal:** To measure the usability of the design in order to fix issues prior to product release
- **When:** Numerous points in the product design cycle
- **Design Model:** a functional prototype or early version of the product
- **Measures:** Qualitative & Qualitative
Sample UCD Resources
Books


Websites

- IBM Ease of Use: Role by Phase: process navigator. Website: [http://www-03.ibm.com/easy/page/2096](http://www-03.ibm.com/easy/page/2096)
- Usability Net. Methods Table. Website: [http://www.usabilitynet.org/tools/methods.htm](http://www.usabilitynet.org/tools/methods.htm)
- Periodic Table of Visualization Methods. Website: [http://www.visual-literacy.org/periodic_table/periodic_table.html](http://www.visual-literacy.org/periodic_table/periodic_table.html)


UCDHSC Informatics

Diane J. Skiba, PhD
UCDHSC SON Overview

- Informatics Specialty - 1992
- Informatics Online Program - 1997
  - 3 Full-time faculty
  - 14 Associate Faculty
  - Masters Degree with informatics specialization
  - Post Masters Degree
  - Health Care Informatics Certificate
  - PhD with cognate in informatics

- http://www.uchsc.edu/nursing/informatics
UCDHSC Informatics

- **Graduates:** 46 Masters, 7 Post MS and 6 certificate, 1 PhD

- **Current Students**
  - 53 Masters Students
  - 5 Post MS Students
  - 1 BS-PhD and 5 PhD
  - 8 Health Care Informatics Certificate
  - 5 AORN Health Care Informatics Certificate
I-Collaboratory

Funded by Division of Nursing (DN),
Bureau of Health Professionals (BHPr),
Health Resources Administration Services (HRSA),
Department of Health and Human Services (DHHS)

Funding: 2003-2006
UCDHSC-McKesson Partnership

Goals

- To provide leadership in the field of health care informatics
- To further development of nursing informatics as a discipline
Objectives:

- Maximize workforce capabilities in health care informatics by providing educational opportunities for graduate students and facilitating the development of a learning community for nurses within McKesson Information Solutions.

- Align incentives to enforce and facilitate the development of joint research and evaluation endeavors.

- Demonstrate the impact of the partnership on the health care informatics field through various dissemination mechanisms such as publications, presentations, educational & marketing materials.
Workforce and Educational Opportunities

- Internship
  - Students in the program are required to do between 3-6 credits of clinical practice
  - Paid internship with McKesson
    - Student work on projects
    - Interaction with a variety of informatics specialists
    - Observe the vendor community
    - Understand the relationships between vendors and their customers
Workforce and Educational Opportunities

- **Learning Community**
  - All McKesson nurses have faculty appointments
  - Guest interactive experiences with student in course
  - Serve as mentors for our students
  - Provide webinars
  - Participate as lifelong learners
Research Opportunities

- **Usability Testing**
  - Tested a PDA version for Home Care
  - Interdisciplinary Care Project
  - Confidentiality Agreement

- **Human Computer Interaction Design Course**
  - Project Consultants
  - McKesson Product Specialists
  - Usability Specialists
Human computer interaction examines the relationship of interface design to effective human interaction with computers. This course examines principles, theory and models to design and evaluate optimal interfaces to promote human computer interaction in health care informatics applications.

3- Credit course
Upon completion of this course, the learner will be able to:

- Compare and contrast models of human and computer processing for their applicability to health care informatics solutions
- Apply models of human and computer interaction to create an optimal HCI design for health care informatics solutions
HCI D Objectives

- Design a usability test of an information system based upon a selected strategy
- Participate in a usability test of an information system based upon a selected strategy
- Create an interactive clinical information system that incorporates design principles for use by health care providers or patients
Competency Assessment

- Participation in Discussions
- Usability Testing
- Prototype Development
Participation

- Rubric--measures
  - Consistency of Responses
  - Evidence of Understanding
  - Degree of Engagement
  - Depth of Commentary
Usability Testing

- Informed Consent
- Non-Disclosure Agreement
- I-Collaboratory
  - Desktop Sharing
- One hour Assignment
Prototype Development

- **Part I: Design**
  - Vision & Scope
  - Guidelines-Principles

- **Part II: Development**
  - User Requirements

- **Part III: Usability Testing Plan**

- **Part IV: Prototype**
Prototype Development

- Team Work
- Conduct User Requirements
- Theory guided and research-based
- Industry Mentors
I really did enjoy the class, it was the best one I have taken so far.

Loved the creative assignments in this class!

A great course! I think this is my favorite so far and I only have one semester left.

Basing the semester project to create a PHR based on the RWJ Foundation guidelines created an element of realism that was really special.
The consultants who worked with our teams provided a realistic perspective from the corporate world. It really enhanced the course and offered variety.

Having the professionals advisors available for the group project was important. The feedback and input was invaluable in terms of applying this knowledge in career settings.

Our McKesson representative was helpful.

Somewhat helpful to have a design consultant
Usability Test - Evaluation Comments

- Usability testing experience provided was very helpful to learning process for the class. Good move to include in class learning experience.

- The McKesson Usability tests were GREAT!


Wrap Up/Conclusion

- **Value of CU-McKesson Partnership**
  - Usability testing
  - Access to nurses
  - Create a learning community

- **Value of Usability testing**
  - Efficiency, save the user time
  - Adoption: increase user value
  - Safety, quality and outcomes
  - Decrease Training Time
  - New potential for research, careers and development