CSC 484 Lecture Notes Week 8

Chapters 13, 14, and 15 of the Book

I. **Relevant reading** -- *See title slide.*

II. **Intro to Ch 13 (Sec 13.1).**

A. Largely a recap.

B. Presents eval framework called "DECIDE".

Intro to Ch 13, cont'd

C. A few new pieces of info.

D. May be helpful in organizing evaluation part of final project report.

III. **Definition of DECIDE (Sec 13.2).**

A. Purpose of framework is to provide high-level organizational guidance.

B. DECIDE has six steps:

Definition of DECIDE, cont'd

1. **D**etermine the *goals*.
2. **E**xplore the *questions*.
3. **C**hoose the *evaluation approach*
4. **I**dentify the *practical issues*.
5. **D**ecide how to deal with the *ethical issues*.
6. **E**valuate, analyze, interpret present *data*.

IV. Determine the goals (Sec 13.2.1).

A. We have discussed this amply.

V. **Explore the questions (Sec 13.2.2).**

A. Also discussed last week.

B. Don’t foget to ask *fundamental* questions.

Explore the questions, cont'd

1. Team may get so fully immersed as to lose sight of basic questions to ask.

2. E.g., "Would you use this product?"

Explore the questions, cont'd

C. Of course, ask in analyzable form

"I would use this product for ..."

- Strongly disagree

...

- Strongly agree

VI. Choosing appro methods (Sec 13.2.3).

A. Been here, done this.

VII. **Identify the practical issues (Sec 13.2.4).**

A. DO DRESS REHEARSAL of your study.

1. Each team member act independently.

2. Enlist help of others.

Identify the practical issues, cont'd

B. ***Practical Users issues.***

1. Pg 631 notes these bits on task length:

   a. 10 minutes too short, 2 hours two long.

   b. This means the 50-minute time slots we have for 484 studies are just about right.

Identify the practical issues, cont'd

2. Pg 631 recounts dilemma of studying people's behavior without influencing it.

3. Lesson for 484 studies -- leave study participants alone as much as possible.

Identify the practical issues, cont'd

C. ***Practical issues of facilities and scheduling.***

1. Plan logistics of your study thoroughly.
2. Think thorough the room layout, etc.
3. Plan all equipment placement.

Identify the practical issues, cont'd

4. Assign study monitoring duties.

5. Determine how the questionnaires will be administered and collected.

Identify the practical issues, cont'd

D. ***Practical issues of expertise.***

1. Use Heather Smith's expertise.
2. Regular office hours, by appointment.
3. Her advise is professional and very helpful.

VIII. **Decide ethical issues (Sec 13.2.5).**

A. You've had a class in this.

B. Activity 13.6 describes practice that you ***should follow***:

Decide ethical issues, cont'd

1. Assign each participant a code number.

2. Have them put number, not name, on questionnaire, other collected data.

3. Keep name-to-code correlation information separate from the collected data.

Decide ethical issues, cont'd

C. Per M3 writeup, you're required to have controlled-study informed consent form.

1. For fellow 484 students,
   an academic exercise.

Decide ethical issues, cont'd

2. It's in fact necessary for the `2d3d` study.

3. Consent form ***not necessary*** for field-study interviews, e.g., `swat`.

Decide ethical issues, cont'd

D. Summary of ethical points to consider

1. Tell participants study goals, etc.
2. Say personal info will be kept confidential.
3. Say they're free to stop any time.

Decide ethical issues, cont'd

4. Consider appropriateness of incentives.
5. Do not report quotes by name.
6. Always ask permission to quote.

IX. **Evaluate, interpret, present (Sec 13.2.6).**

A. 484 studies not subject outside to scrutiny (most likely).

B. Worth considering these criteria:

Decide ethical issues, cont'd

1. ***Reliability***
2. ***Validity***
3. ***Biases***
4. ***Scope***
5. ***Ecological validity***

Evaluate, interpret, present, cont'd

C. Wikipedia article on *Hawthorne effect* is quite cogent.

X. Introduction to Ch 14 (Sec 14.1)

A. Primary focus on finished products.

B. Many specifics don’t apply to 484 studies.

C. Nevertheless, there is some useful info.

XI. **Usability testing (Sec 14.2)**.

A. To review, key components are:

1. user tests
2. satisfaction questionnaires
3. interviews

Usability testing, cont'd

B. For fully quantifiable tests:

1. time to complete a task

2. time to complete, after being away

Usability testing, cont'd

3. number of errors per task
4. number or errors per unit of time
5. number of navigations to help
6. number of users making particular error
7. number of users completing task

Usability testing, cont'd

C. Number of study participants varies.

1. Dumas and Redish say 5-12.

2. Nielson says 5-15.

3. Both focus on specific features, running a number of small tests.

Usability testing, cont'd

4. Stat analysis depends on desired results.
   a. Generally, sample size > 15.
   b. Well-known formulae for caluculting.
   c. See Russ Length's web page at

      `www.stat.uiowa.edu`

Usability testing, cont'd

D. The venues of usability studies vary widely.

1. Large companies, like Microsoft, have large dedicated spaces, fully equipped.

2. Other end of spectrum is "lab-in-a-suitcase".

3. Also remote monitoring.

XII. **Usability testing of large website (14.2.1).**

A. Book walks through concrete example.

B. Review of steps involved:

Usability testing of large website, cont'd

1. ***Establishing goals and questions***
2. ***Selection of participants***
3. ***Development of the tasks***
4. ***The test procedure***
5. ***Data collection***

XIII. **Conducting experiments (Section 14.2.2).**

A. Carried out as scientific experiment.

B. Involves testing specific hypothesis.

C. Basic hypothesis stated with two variables.

Conducting experiments, cont'd

D. E.g., *"Reading text displayed in 12-point Helvetica font is faster than ..."*

E. Variables are *dependent*, *independent*.

Conducting experiments, cont'd

1. Value of independent var *selected*.

2. Value of dependent variable *measured*.

Conducting experiments, cont'd

F. The *null* and *alternative* forms.

1. Null hypothesis states opposite.

2. E.g, no diff in reading times.

3. Null hypothesis provides baseline.

Conducting experiments, cont'd

4. Significance defined in terms of it.

5. Allows proof-by-contradiction.

6. If gathered data rarely support null hypoth's, alternative assumed true.

Conducting experiments, cont'd

G. HCI experiments often involve multiple vars.

1. > one dependent var, or independent var.
2. Also unmeasured vars.
3. E.g., font color and screen res.

Conducting experiments, cont'd

H. Significant challenges are:

   1. identify all the vars

   2. keep unmeasured vars fixed

Conducting experiments, cont'd

I. Book provides further details.

J. 484 research readings have examples.

K. Many web and textbook resources

XIV. **Field studies (Section 14.3).**

A. Recap of preceding chapters.

B. Important points (`swat`):

Field studies, cont'd

1. Tell participants what they'll do.
2. Have a plan, but be flexible.
3. Let participants "do their own thing".
4. Observe participants unobtrusively.
5. Record with notes, and other forms.

Field studies, cont'd

C. Larger-scale examples in Section 14.3.

D. Theoretical frameworks
   -- *activity theory*, *semiotic engineering*.

XV. **Intro to Ch 15**

A. Was subject of 484 Assignment 1.

B. Does not involve *actual* end users.

C. Rather, done by experts.

XVI. Heuristic Eval (Section 15.2)

-- *Covered in Assignment 1.*

XVII. **Inspection Walkthroughs (Section 15.3).**

A. Typically performed by team.

B. Per Nielson,

Cognitive walkthroughs involve simulating a user's problem-solving process ...

Inspection Walkthroughs, cont'd

C. Steps of a cognitive walkthrough:

1. *Identify user characteristics.*
2. *Convene designers, usability experts.*
3. *Walk through tasks.*
4. *Record important info.*
5. *Revise the design to fix problems.*

Inspection Walkthroughs, cont'd

D. Should be *egoless*.

1. Designers don't defend bad designs.

2. Usability experts lose their attitude.

Inspection Walkthroughs, cont'd

E. *Pluralistic walkthroughs*:

1. Usage scenarios part of the process.

2. Analysis involves collaborative discussion.

XVIII. **Predictive models (Section 15.4).**

A. No users, no role-playing users.

B. Uses a formulaic model.

XIX. GOMS models (Section 15.4.1)

A. Aacronym for:

1. *Goals*
2. *Operators*
3. *Methods*
4. *Selection rules*

GOMS, cont'd

B. Generic model; does not predict specific user performance numerically.

XX. The keystroke-level model (Section 1.5.2)

A. Model provides actual numeric predictions.

B. Based on analysis of empirical studies.

C. Table on Pg 709 lists times for core tasks:

Keystroke-level model, cont'd

1. pressing a key
2. pointing with a mouse
3. clicking the mouse
4. homing hands on the keyboard
5. drawing a line with a mouse
6. making a decision
7. system response time

Keystroke-level model, cont'd

D. Just add up the numbers.

E. The book provides a couple examples.

XXI. **Benefits, limitations of GOMS (15.4.3).**

A. Provides hard data.

B. Can lead to design improvements.

C. However,

Benefits, limitations of GOMS, cont'd

1. Limited to routine tasks.
2. No user errors.
3. No other factors, such as

Benefits, limitations of GOMS, cont'd

a. fatigue

b. distractions

c. multi-tasking

d. learning effects

XXII. **Fitts' law (Section 15.4.4).**

A. Published in 1954 by Paul Fitts.

B. Says where to place interface widgets.

C. Bigger the target, easier to reach.

Fitts' law, cont'd

D. Specific HCI results:

1. Don't have lots of tiny buttons.

2. Put things in the four corners.

Fitts' law, cont'd

E. Some good design results.

F. 2008 SIGCHI session:

"Fitt's Law Lives".