UCI University of California, Irvine

Informatics 134

Software User Interfaces
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Agenda

1. Upcoming
2. Reducing Gaps through Learnability
3. Project Review
4. References

Upcoming

Upcoming

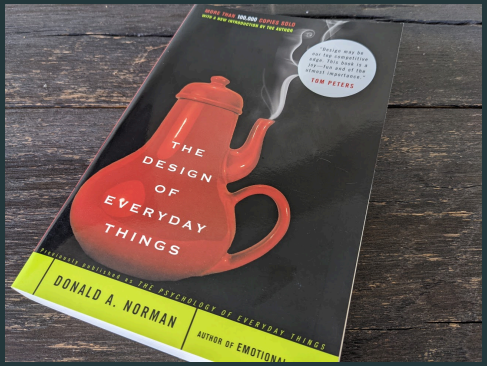
- Today:
  - Bridging the Gulfs
  - Due Tonight: A4 Brainstorm and Ideation
- Next Week:
  - Evaluation methods
- User Evaluations:
  - Due May 14th
  - Testable interface ready by 5/9

Reducing Gaps through Learnability

Reducing the Gaps

On Execution and Evaluation

- Written by Don Norman (UCSD, nngroup.com)
- The hidden frustrations with everyday things
- Principles for design



The Design of Everyday Things [Norman, 1988]

On Execution and Evaluation

> ‘‘The basic idea is simple. To get something done, you have to start with some notion of what is wanted—the goal that is to be achieved. Then, you have to do something to the world, that is, take action to move yourself or manipulate someone or something. Finally, you check to see that your goal was made. So there are four different things to consider: the goal, what is done to the world, the world itself, and the check of the world. The action itself has two major aspects: doing something and checking. Call these *execution* and *evaluation*.’’
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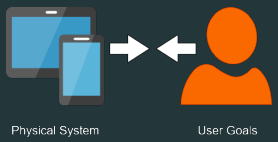
> ——[Norman, 1988], p. 46

Reducing the Gaps



Gulfs of Execution

Represent the *gaps* between user goals and the input or interactions required to complete them.

Gulf of Evaluation

Represent the *gaps* between the output of a user interface and user goals.

Good user interface design starts with identifying and finding ways to reduce the gaps.

On Affordances

> ‘‘Affordances provide strong clues to the operations of things. Plates are for pushing. Knobs are for turning. Slots are for inserting things into. Balls are for throwing or bouncing. When affordances are taken advantage of, the user knows what to do just by looking: no picture, label, or instruction needed.’’
>
> ——[Norman, 1988]

Reducing the Gaps

So...

Affordances provide clues about how a thing operates.

Signifiers help indicate the affordances of a thing.

Team Activity

Good signifier or bad signifier examples?

Reducing the Gaps

Signifiers are one way we can design user interfaces to ”bridge” the gaps. What are some other ways?

Reducing the Gaps

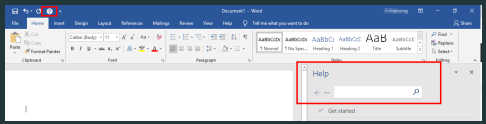
Learnability

- Provide awareness of affordances
- Help locate affordances
- Inform use of affordances

Reducing the Gaps

Strategies to improve learnability

Help or Integrated Search

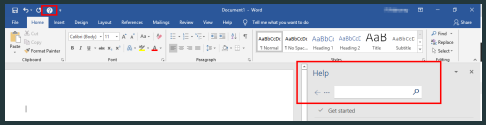


Reducing the Gaps

Strategies to improve learnability

Help or Integrated Search

- Negative perception by users
- Removes user from task at hand
- Vocabulary problem



Reducing the Gaps

Strategies to improve learnability

Vocabulary (e.g., 'select')	People rarely use the same words to describe something Accuracy requires 'aliases' or 'armchair' terms [Furnas et al., 1987] A choice between low recall vs. low precision (though this seems to be changing with recent AI)

Reducing the Gaps

Strategies to improve learnability

Teach or train through tutorials

Have you ever read the help docs?

The paradox of the active user
[Carroll and Rosson, 1987]

Most users need documentation to learn interfaces

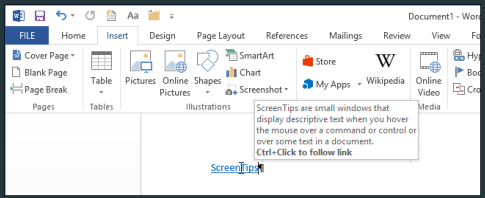
Most users find learning a distraction to their immediate goals

Reducing the Gaps

Strategies to improve learnability

Tooltips or ScreenTips

- Good for simple tasks
- Less helpful for multi-step tasks
- But when do you show?

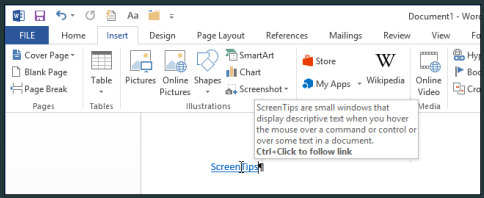


Reducing the Gaps

Strategies to improve learnability

Seek vs. Infer

- Rules based support (e.g., if x then y)
- Assume novice, always display
- Monitor behavior to model when help is needed...



Strategies to improve learnability

Seek vs. Infer

- Rather than rely on the user to know, infer based on user behavior [Horvitz, 1999]
- Horvitz's Lumiere system attempted to infer user goals from a history of their actions.
- Held promise...but due to a variety of complications led to...

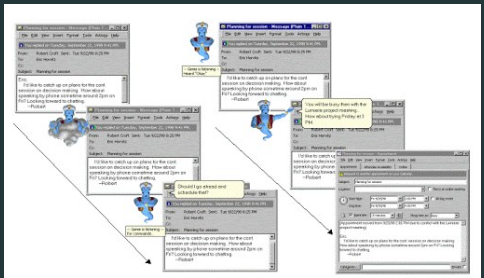


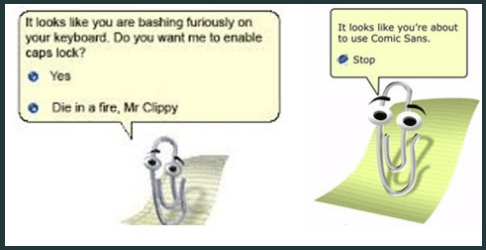
Figure: Lookout operating in its social user-interface modality.

Reducing the Gaps

Strategies to improve learnability

Seek vs. Infer

- The infamous Mr. Clippy
- Ended up adopting a rules-based approach rather then action-history modeling.



Reducing the Gaps

Strategies to improve learnability

Inference still holds promise...

- Make assumptions based on experience (novice vs. expert)
- Ask? (e.g., profile setup)
- Infer based on behavior
- Hurst, et al., implemented a classifier that could identify skill based on accuracy of interaction [Hurst et al., 2007].

- Pauses in action
- Undo or erase frequency
- Disruption to expected flow
- Avoidance of feature or lack of use

Project Review

References

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