

Comp 341/441 - HCI - Slides

Spring Semester 2018 - week 12

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Users and Skills

development of skills

- user classification is inherently a simplistic interpretation of skills acquisition and development
- many disparate factors influence development of skills, e.g.
- **domain knowledge**
 - *assumption of underlying, pre-existing knowledge for a given application's scope*
- **general computing skills and knowledge**
 - *many applications assume general computing skills and knowledge*
 - *eg: simple ability to use similar applications*
 - *ability to use their chosen mode and tools of interaction*
- **general intelligence and reasoning abilities**
 - *an assumption of general reasoning and extrapolation skills*
 - *ability to read and understand help documentation...*
- **persistence, motivation, and dedication**
 - *some users will, of course, give up when faced with problems and challenges*
 - *others are more persistent and will try to solve a problem or issue*
 - *gamification and rewards may help this issue...*

Users and Skills

assumptions - part I

- consider basic assumptions about users' minimum required skills and knowledge
- often dependent upon goals and functionality of the product, application...
- some inherent assumption of skills for your application
 - *eg: user will be able to use a keyboard, mouse, touchscreen...*
 - *basic level of verbal, reasoning, and mathematical knowledge*
- valid user testing important relative to such assumptions
- testing helps define and highlight unrealistic design choices and assumptions
- modify assumptions and design in response to testing feedback
 - *re-consideration and re-design may be necessary*

Users and Skills

assumptions - part 2

- assumption of Domain knowledge - Documenta Latina
- gaming and applications
 - eg: *Royal Game of Ur*



Royal Game of Ur

Source - Royal Game of Ur British Museum

Video - Users and Skills

Deciphering the world's oldest rule book



Deciphering the world's oldest rule book

Source: The British Museum - YouTube

Video - Users and Skills

The Royal Game of Ur



The Royal Game of Ur

Source: The British Museum - YouTube

Users and Skills

skill levels and design - part I

■ **evaluators**

- *design needs to present good first impression, be pleasing overall, and inviting*
- *should not give the impression of being overly complex*
- *introductory material, such as demo video or guided tour with step-by-step instructions*
- *sample files, demo material allows users to test functionality and see what is possible*

■ **beginners**

- *functionally easy for our users to learn and discover an application*
- *eg: offer wizard style guidance to create an initial project, document*
- *easy undo/redo errors and mistakes - hopefully promotes experimentation in the app*
- *in-depth tutorials and intro guides, such as manuals, help videos, online help*

Users and Skills

Fun exercise - part I

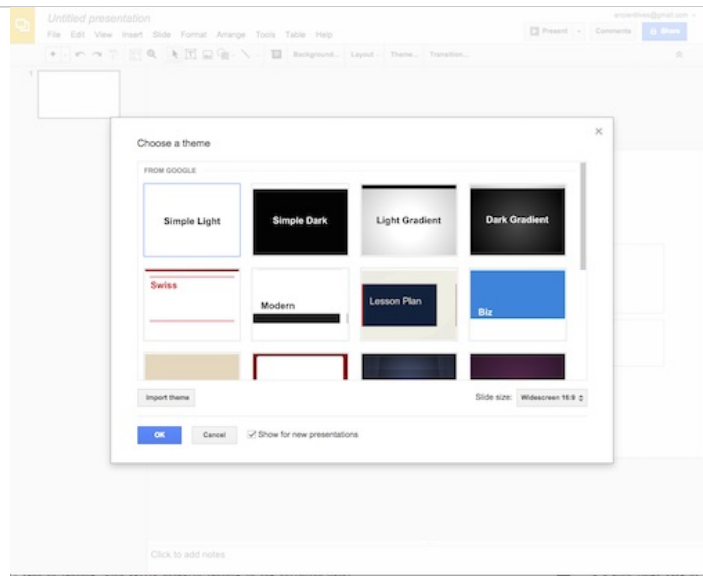
Consider a mobile or web based application to help users search for properties, e.g. house, apartment, to buy or rent

Then, outline the following

- initial UI concepts designed to engage and attract an **evaluator** user
- key features and functionality to allow a **beginner** user to quickly understand and use the application
 - e.g. *how to promote core functionality?*
 - *how to encourage initial usage without a steep learning curve?*
 - ...

Image - Users and Skills

getting started



Google Slides - Getting Started

Source - Google Slides

Users and Skills

skill levels and design - part 2

- **intermediate** (in addition to the above considerations)
 - *fully indexed and searchable help resources*
 - *allow users to quickly find exactly what they need*
 - *online forums and social options and interaction promote sense of community*
- **expert**
 - *quick completion of tasks with maximum efficiency*
 - *provide shortcut options, keys, and greater customisation options*
 - *bypass and limit beginner tools, wizards, menus etc...*
- **power**
 - *allow greater freedom for users and interaction*
 - *user developed scripts, plugins, add-ons*
 - *developer tools, APIs, discussion forums, manuals...*
 - *carefully consider security implications*

Users and Skills

Fun exercise - part 2

Continue the design of a mobile or web based application to help users search for properties...

Then, outline the following

- consider further features and functionality for **intermediate** and **expert** users
- how may we balance these new features with the previous requirements &c. for a **beginner** user?

Users and Skills

skills change over time

- familiarity, experience, and comfort with an application often increase a user's skills
- skills tend to improve as follows
 - *improved awareness of the application's options, tools, and capacity*
 - *improved and increased awareness of how to perform tasks, handle special cases successfully*
 - *a much lower rate of errors, issues, and mistakes*
 - *increased rate of productivity and completion, speed, efficiency, and so on...*
 - *a general increase in confidence and greater ease at achieving a sense of flow with the application...*
- might also expect general improvement in quality of work
 - *quality often hard to define, measure, and assess*
 - *easier for procedural tasks and jobs than conceptual*

Users and Skills

practice makes perfect

- improve skills through regular practice
- for our applications and products
 - *ensure users practice and repeatedly perform given tasks*
- some application scenarios naturally make it easier for users to practice
- simple act of repetition of regular tasks often mimics regular practice
 - *practice due to necessity*
- *"people generally become skilled in whatever becomes routine for them."*
 - *Card et al. P.188. 1983.*
- **deliberate practice** is the act of intentionally practicing with focused attention
 - *specific goal of improving skill levels, working and training at increasing levels of difficulty*
 - *often requires careful monitoring and evaluation of work and results*
 - *motivation and self-improvement important*

Users and Skills

Fun exercise - part 3

Continue the design of a mobile or web based application to help users search for properties...

Then, outline the following

- consider training and practice options for **beginner** and **intermediate** users
- how may we introduce both *implicit* and *explicit* options?

Video - Users and Skills

How to practice effectively...



'How to practice effectively...'

Source: TED-Ed - YouTube

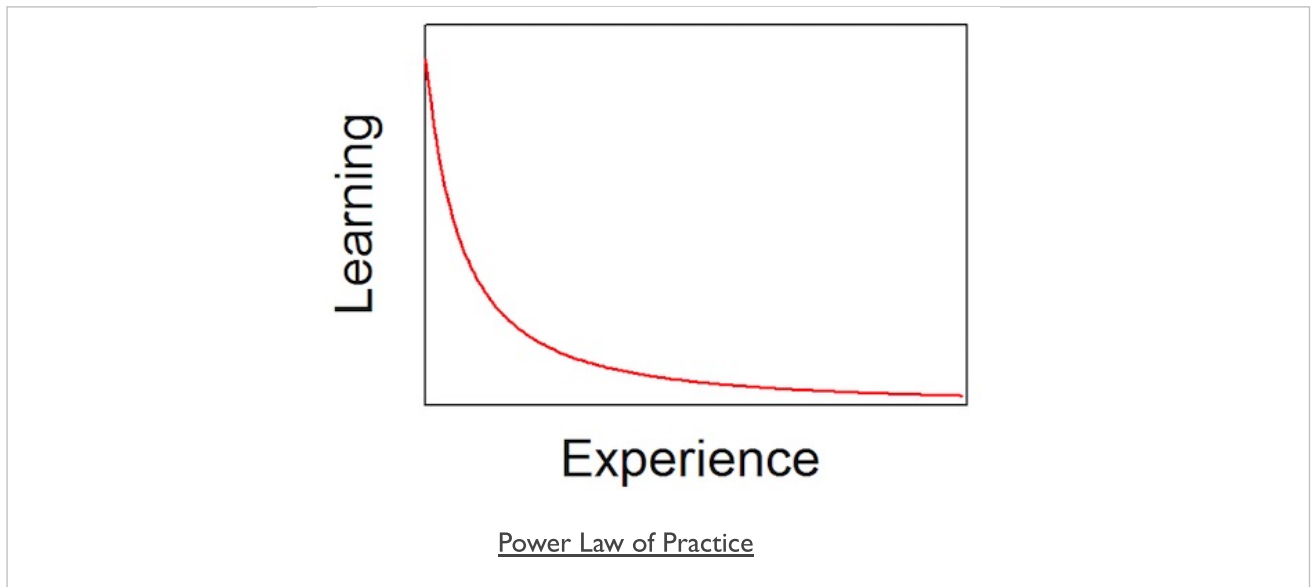
Users and Skills

monitoring practice and skills

- **Power Law of Practice** - Card et al. 1983
 - *applies to most mechanical and cognitive skills, not always relative to knowledge acquisition*
- as users gain in experience relative to increased practice
 - *related application performance tends to increase rapidly, then slow to a steady rate*
 - *steady peak normally reflects attained peak performance for the practiced skill*
- lack of practice naturally leads to loss of performance and skill
 - *drop in frequency and intensity of practice*
 - *motor skills do not normally atrophy as quickly as knowledge based skills*
 - *simple to refresh these skills with a period of further training and practice*
- designers need to be aware of this potential for skills atrophy
 - *complex, detailed applications may consider detailed help systems, options*
 - *allow a user to quickly refresh knowledge using practice exercises, tests, incentives...*

Image - Users and Skills

power law of practice



Source - Wikipedia

Video - Users and Skills

How to read music



'How to read music'

Source: TED-Ed - YouTube

References

- Card, S.K., Moran, T.P. and Newell, A. *The psychology of human-computer interaction*. Lawrence Erlbaum Associates. 1983.
- Robinson, W.L. *Conscious competency - the mark of a competent instructor*. Personnel Journal, 53. PP. 538-9. 1974.
- Shackel, B. *Usability - context, framework, design, and evolution*. Human factors for informatics usability. Cambridge University Press. PP. 21-38. 1991.