# 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 1

- 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*

### Fun exercise - part 1

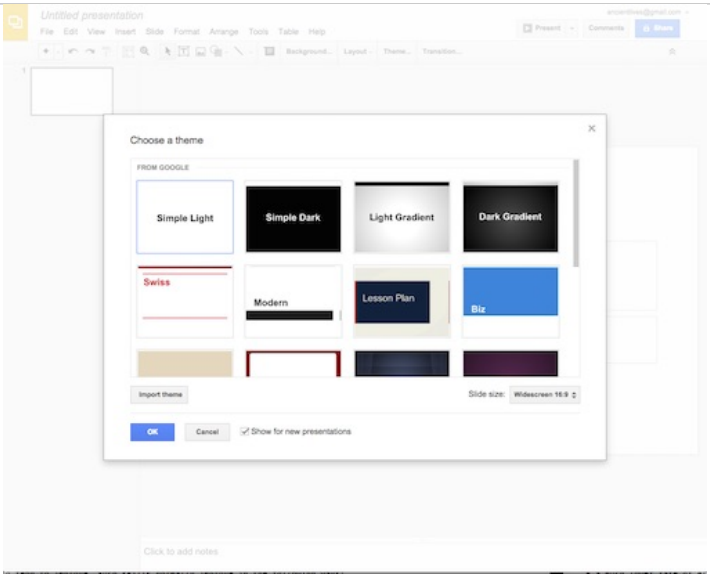
Consider a mobile or web based application to help users search for properties, e.g. house, apartment, to buy or rent

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*

### 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*

### 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

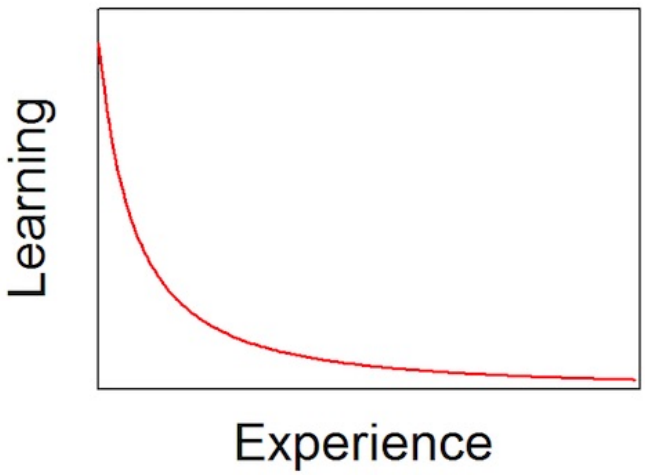
# Users and Skills

### 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**




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.